WESTERN GAS

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1926

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Twelve high pressure gas holders like the two above, which are located at Sierra Madre, Southern California, are on the system of the Southern Counties Gas Company

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A MONTHLY JOURNAL DEVOTED TO THE
WESTERN GAS & APPLIANCE INDUSTRIES

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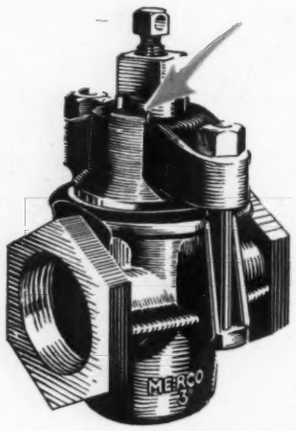

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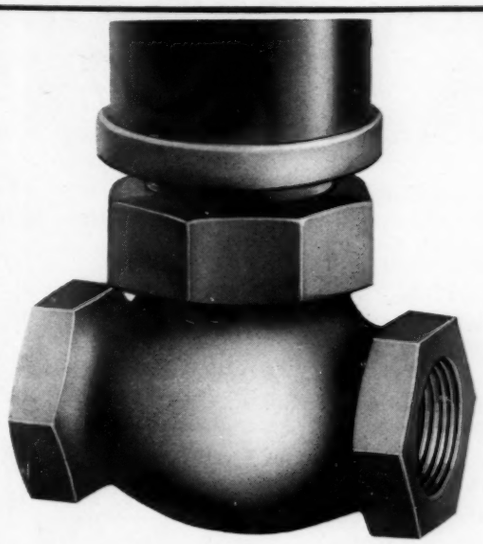

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Official Publication Of The
Pacific Coast Gas Association

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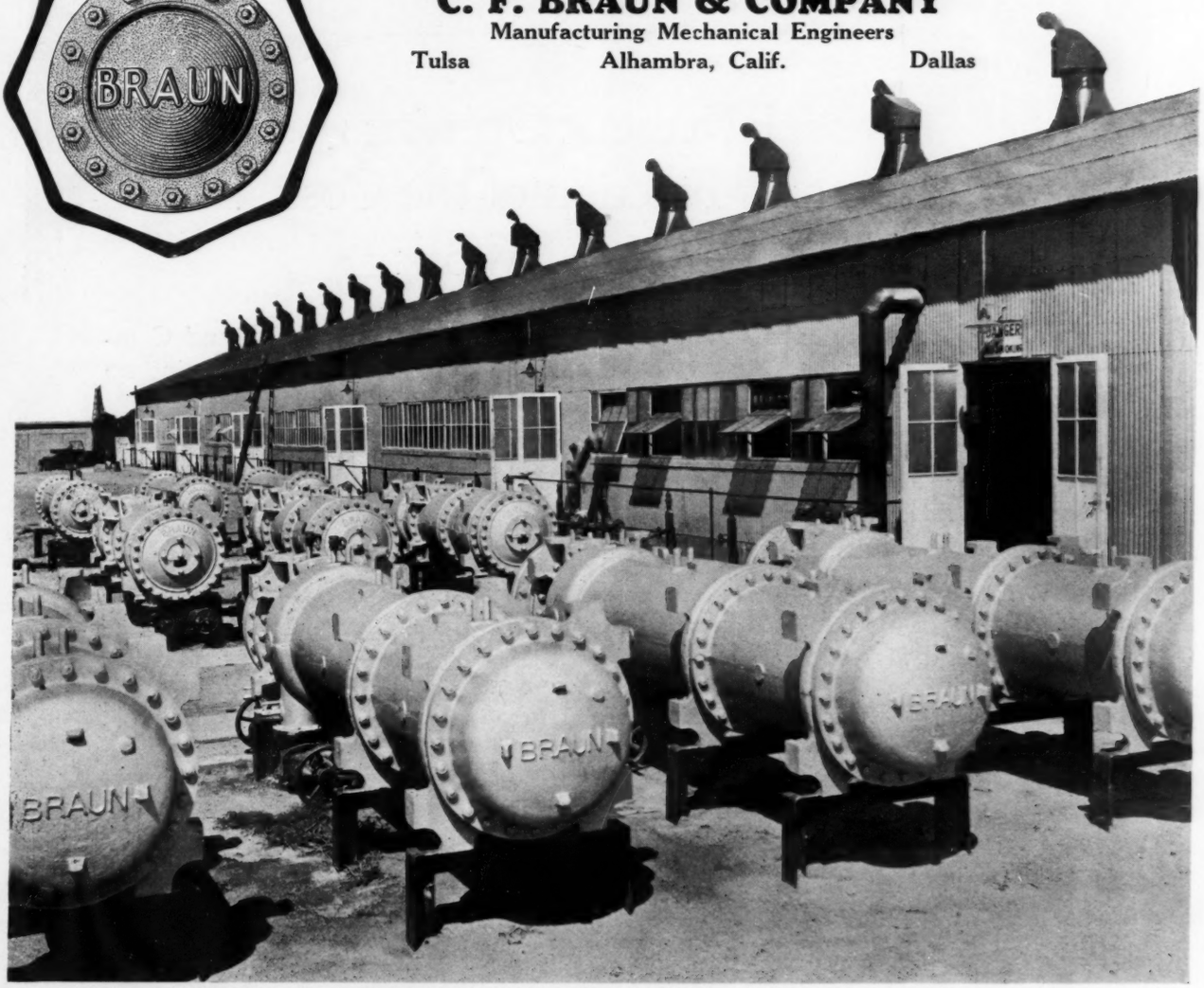

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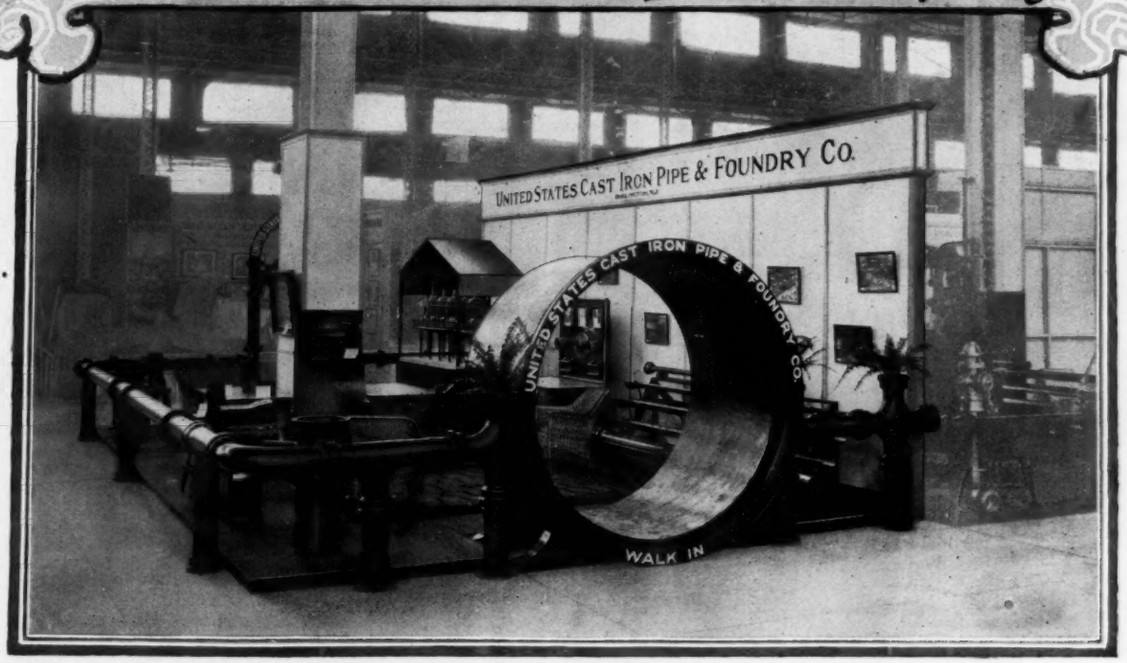

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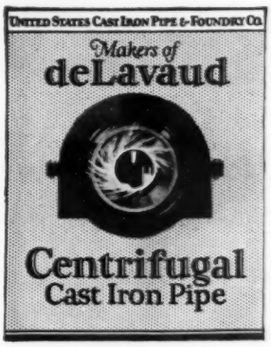

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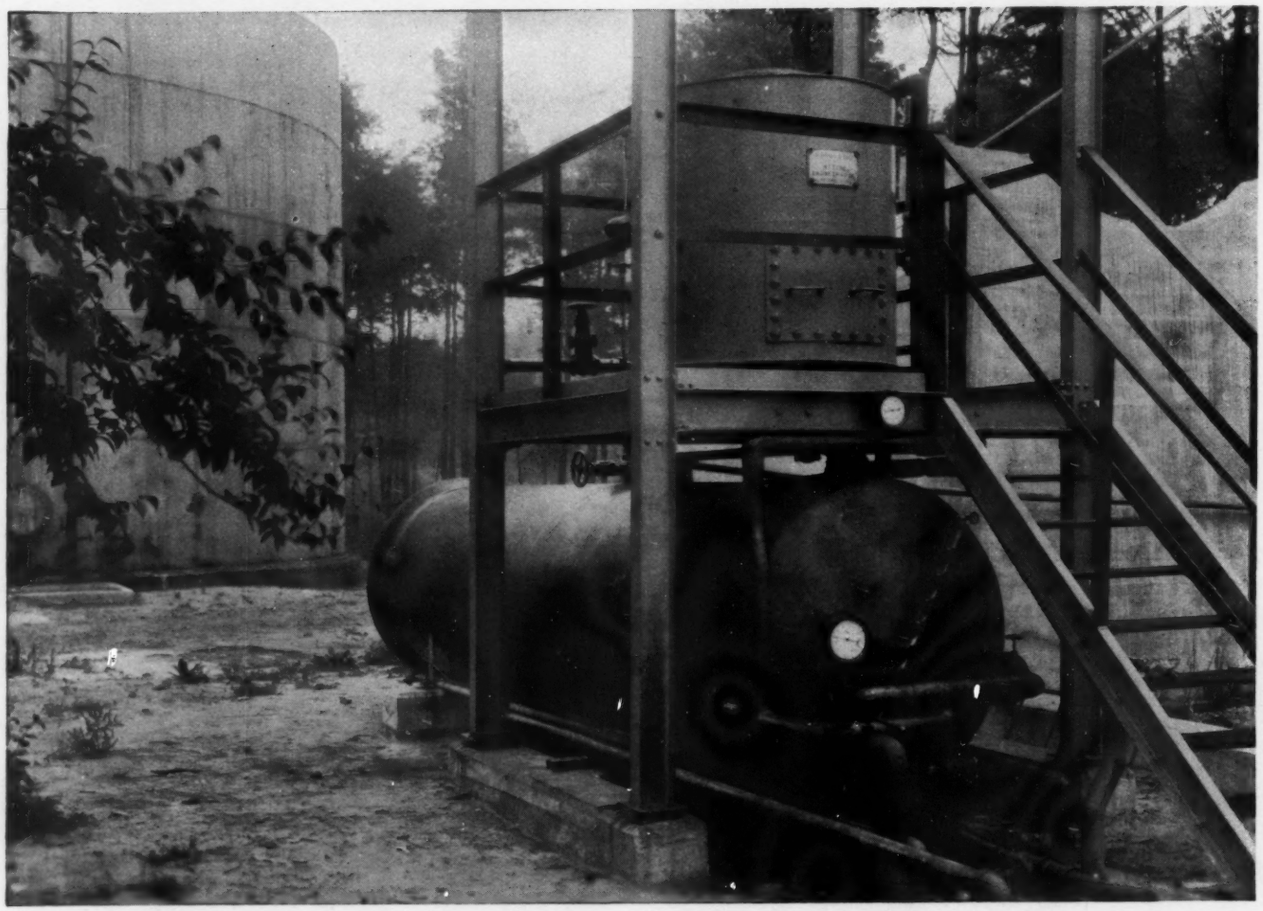

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282

Greetings

We have been working together over thirty years, and we personally have enjoyed it so much that we are beginning to gloat publicly over our long and happy association with one of the most important public utilities in this great country of ours.

The Gas Industry and the Goodman Stopper are growing older and better together.

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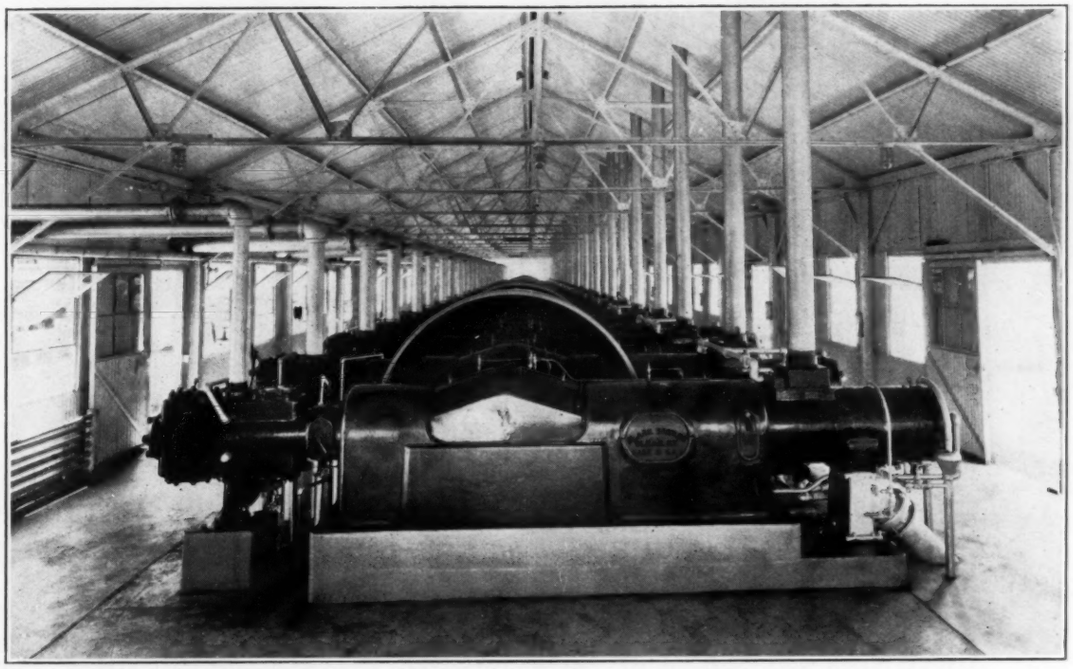

The new plant of the Phillips Petroleum Corporation at Wewoka, Oklahoma, contains 26 CLARK 165 H. P. Two-Cycle Compressors.

CLARKS are also favorites in the Mid-Continent Field because they pump the maximum amount of gas with the minimum amount of trouble. There are no weak points in CLARKS and major breakages are rare; in fact, almost unknown.

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The American Gas Meter Is Born

UP to 1832 there were no gas meters made in America. England, having started the first gas distributing company, likewise developed and manufactured the gas meters used during the pioneering period of the gas industry.

The first gas meter in this country was produced by Samuel Hill at Baltimore in 1832. In the same year John Rogers, a machinist of that city, made a gas meter of similar design. The latter device was produced under the supervision of John M. Slaney, who, before coming to the United States in 1820 and settling in Philadelphia, had learned something about making meters in London.

Hearing of a new American made meter, the Baltimore Gas Company investigated Mr. Rogers' meter, approved it and placed an order for 1000 of them. Rogers, realizing the possibilities of the business and with no experience in meter manufacturing, persuaded Mr. Slaney to take charge of his meter shop.

Hence, in a small shop in the City of Philadelphia almost 100 years ago, was started the first American meter manufacturing plant. It was no longer necessary to import gas meters from England. A new American industry had been born.

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of the
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P G and E engineers will serve you

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P·G·and E·

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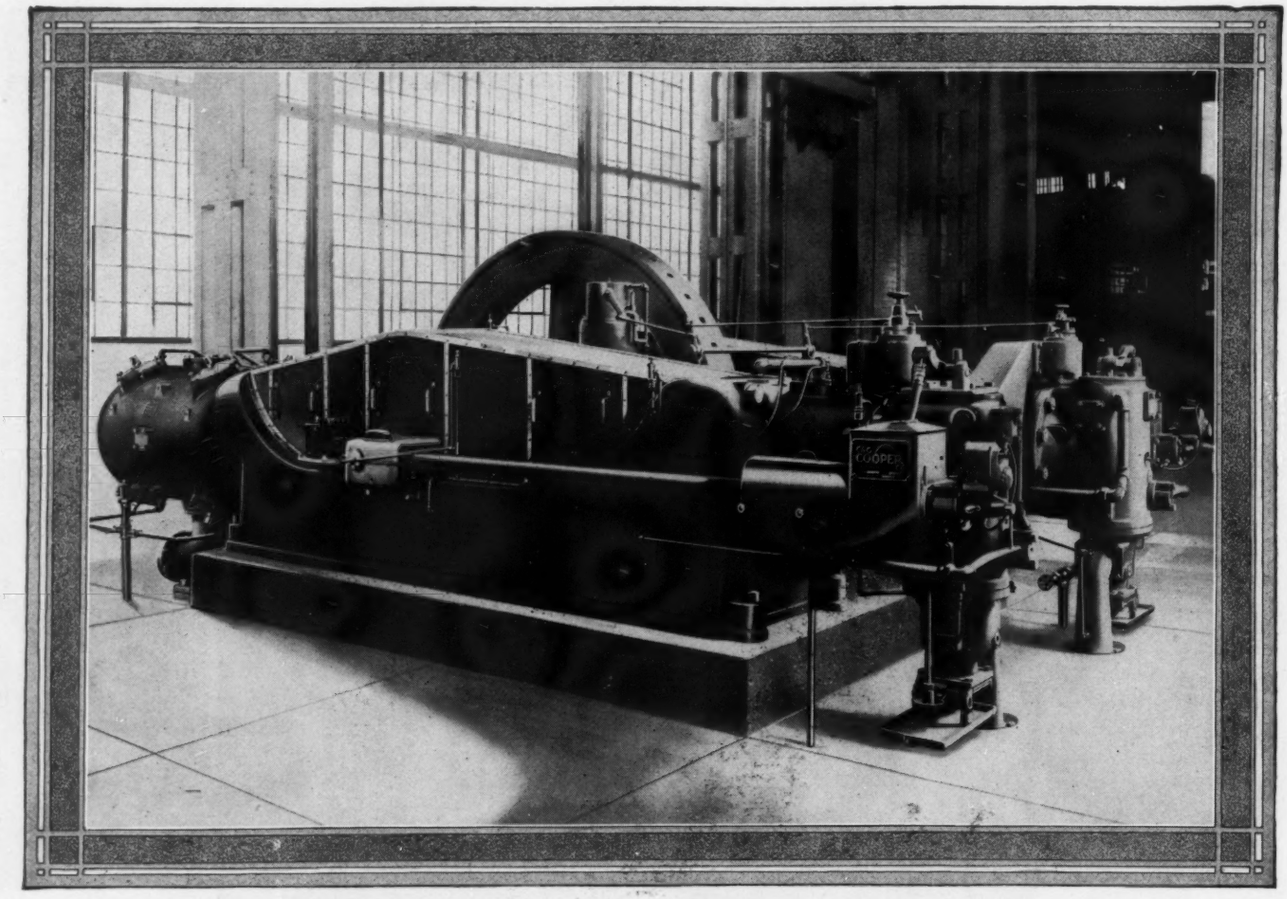
IF IT'S DONE WITH HEAT YOU CAN DO IT BETTER WITH GAS



Among the companies which are proud of their compressor stations—

Why do so many of them use Cooper gas engines?

The best explanation is the one given by the manager of a nationally known oil company. He once called the attention of a visitor to the manner in which his company installed such a simple thing as a pumping power. He said, "We use the best one we can get, then install it as though we expected it to stay there forever. Accurate operating and maintenance records have proved to us that our policy is steadily reducing our production costs."

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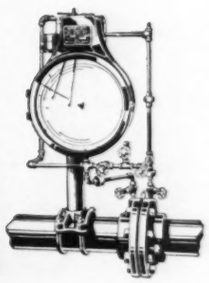

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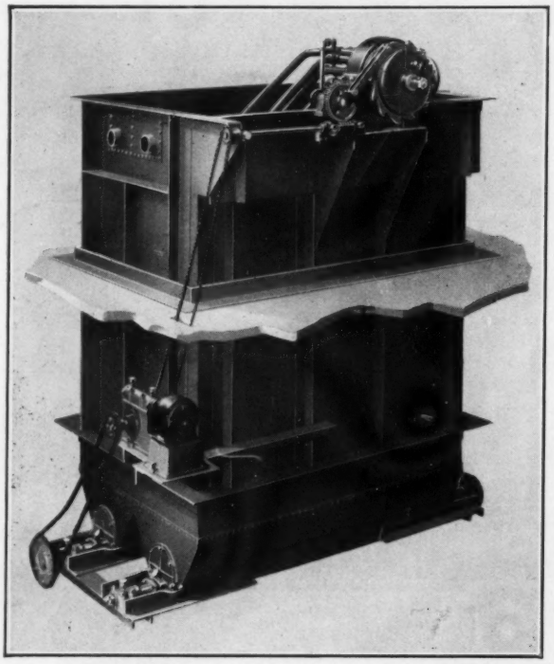

Oliver-Borden Thickner with Steel Tank

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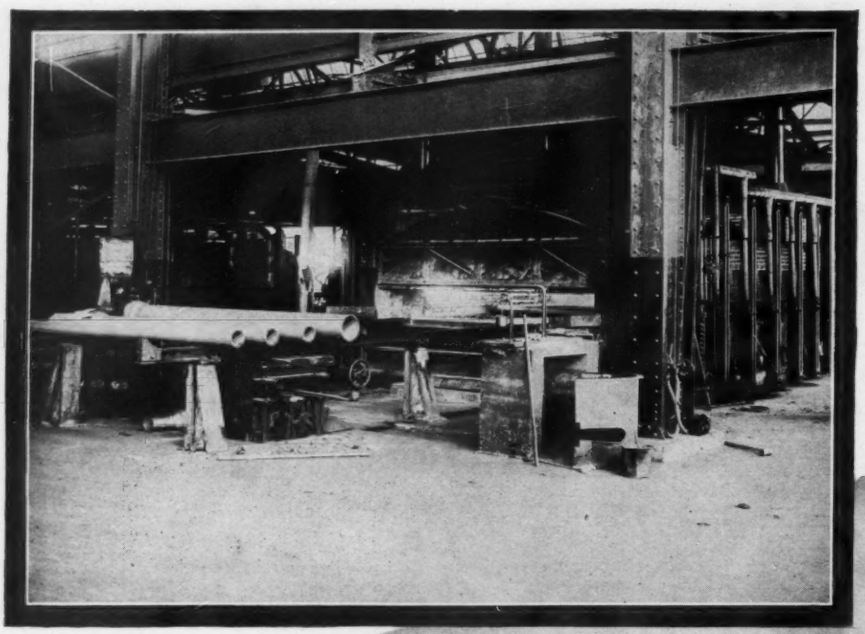
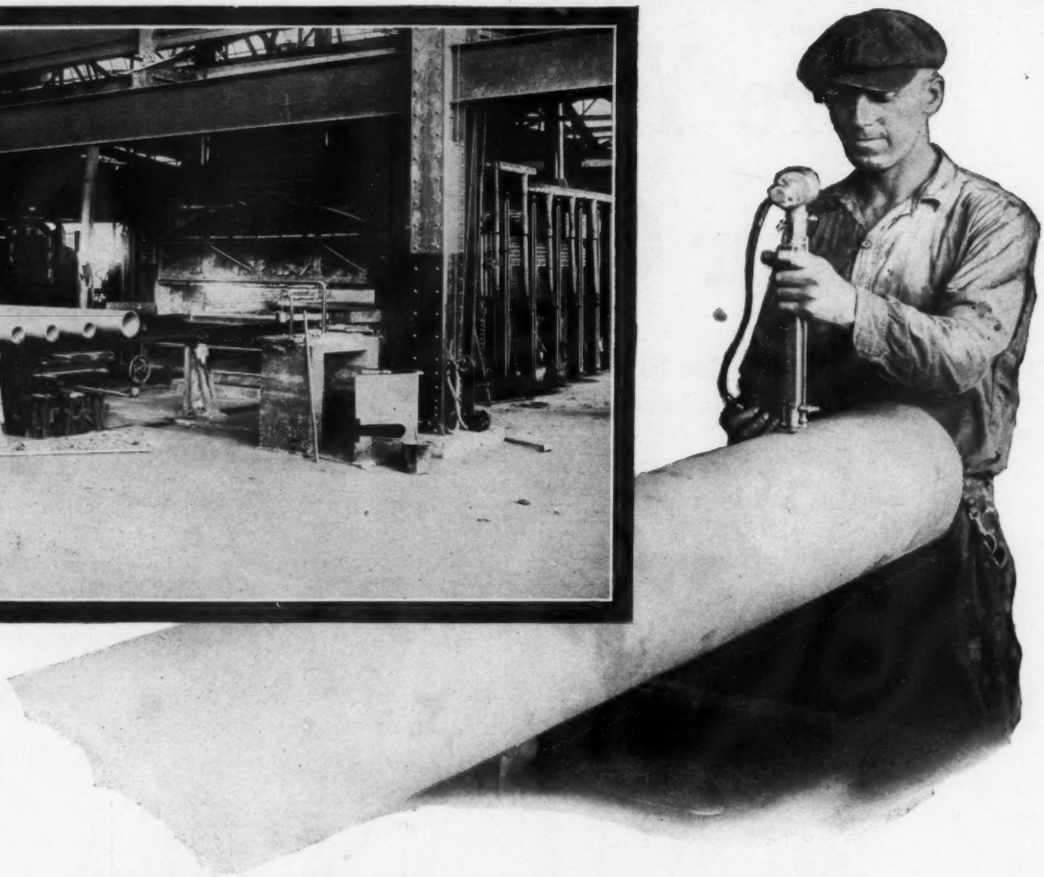


Annealing oven at our Burlington Plant



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WESTERN GAS

A Monthly Journal of the Gas, Gas Appliance and Natural Gasoline Industries in the *Eleven Western States*

Gas Men Gather *en masse* for Annual A. G. A. Convention

By JAY E. JENKINS

IMPROVEMENT of sales methods for the purpose of retaining and expanding the domestic load, the development of proper rate structures, increased interest in safety work and technical research, the institution of laboratory-approved appliances and the outlawing of inferior equipment, a development of the industrial business by advertising and a half-million dollar research program, the education of gas company employees, and a campaign of national advertising were some of the important projects discussed at the eighth annual convention of the American Gas Association, which was held on the Million Dollar Pier at Atlantic City, N. J., October 11 to 15.

The program of the entire convention was based on the report of the Three-to-Five-Year Program Committee that was made to and approved by the Executive Board of the Association at a recent meeting. This Three-to-Five-Year Program Committee was made up of men who are public utility leaders in the country, headed by Geo. B. Cortelyou, president of the Consolidated Gas Company of New York, New York.

REGISTRATION PASSES ALL RECORDS

The convention, needless to say, was the largest and best ever held by the American Gas Association. The final registration figure of 4152 broke all previous records, exceeding that of 1925 by about 300. In addition, the number of men from the Pacific Coast attending, more than 25, was a decided increase over previous years.

With the announcement that the 1927 convention of the A. G. A. will be held in Chicago, there is ample assurance that Western gas men will take a more active part than ever before—and rumor has it that San Francisco and Los Angeles are receiving consideration for the convention site in 1928. Convention dates in 1927 are to be the second week in October, and the new Stevens Hotel—world's largest hostelry, offering 3000 guest rooms and an exhibit hall big enough to house the largest displays and exhibits—will be convention headquarters.

The officers elected at the Atlantic City meeting are:

President, Alexander B. Macbeth, executive vice-president, Southern California Gas Company and Midway Gas Company, Los Angeles, Cal.

Vice-president, Oscar H. Fogg, vice-president, Consolidated Gas Company of New York, N. Y.

Treasurer, Clifford E. Paige, vice-president, Brooklyn Union Gas Company, Brooklyn, N. Y.

At the meeting of the Executive Board of the Association held in Atlantic City the week of the annual convention, Alexander Forward, who has been Secretary-Manager, was made Managing Director of the Association.

The exhibition of appliances and gas-making equipment surpassed anything of the kind ever seen in the industry. The facilities for display were better this year than in other years, and the result was ample space for everyone and better-planned and constructed individual displays.

Leonard's Waldorf-Astoria orchestra was imported from New York to furnish concert and dance music for the A. G. A. delegates. Station WPG broadcasted the musical programs.

A careful presentation and development of the Three-to-Five-Year Plan made up the program of the convention. Every speaker, before the general sessions as well as before the sectional meetings, gave one phase of the problem, with the result that this most comprehensive plan of the Association was presented to the members in a striking and impressive fashion.

THE THREE-TO-FIVE-YEAR PLAN

Recommendations submitted by the Three-to-Five-Year Program Committee were as follows:

"That intensive efforts be made to secure cooperation within the gas industry and with all practicable enterprises and activities outside of the industry, to improve selling methods, to stimulate selling efforts, to enlarge understanding and appreciation of gas service, with special emphasis upon conservation and expansion of the domestic load, upon water heating and house heating as additions to the domestic load, and upon large-volume use of gas in commercial and industrial enterprises.

That an educational campaign be carried on, both in and out of the industry, having in view the application of proper rate structures and proper bases for valuation in adequate rate-making.

That technical research in all fields affecting the gas industry be intensively prosecuted.

That especial and continued attention be given to the subjects of asphyxiation and resuscitation.

That every effort be made to enlist cooperative support of the Testing Laboratory.

That the Association assemble, so far as

possible through the aid of local gas companies, in cities where appropriate conventions are held, displays of industrial heating appliances, to be exhibited at such conventions.

That the campaign of advertising, in trade journals, gas for industrial heating, be continued.

That the Association form a special committee of executives, commercial men and manufacturers to work out a cooperative plan of national advertising.

That the campaign of education be continued; and that coincident with this work the Association support courses in gas engineering and fellowships in educational institutions.

That the statistical work of the Association be kept responsive to the needs of the industry.

That a general policy be adopted which will recognize the just claims of the several sections of the country, as to the time and place of the annual conventions.

That a study be made of necessary modifications of the By-Laws.

"That there be continued adherence to the policy that the Association shall not extend its work beyond those objects which are of first importance and greatest practical value to the industry, it being obvious that if its activities become broadened beyond the scope of practical accomplishment, its influence will inevitably be weakened.

PROVIDING FUNDS

"In regard to the important subject of providing funds with which to meet any additional expense involved in favorable action on certain of the committee's recommendations, we feel that, as soon as it is feasible to do so, the Association should pay for the various undertakings out of its resources, secured through dues or other direct subscriptions to its treasury.

"To continue indefinitely the practice of soliciting contributions from the limited number of the larger companies that now support such activities, would, we believe, be inconsistent with the avowed purpose of those who founded this organization and those who have guided its affairs to the present time, to encourage the greatest possible measure of cooperative action, with distribution of burdens and proper participation in its councils. Every members should contribute a just share of the funds to finance its activities.

"We recommend, finally,

That the President be authorized to appoint a committee to formulate plans for providing the funds required to meet the foregoing recommendations, said committee to report its findings at the earliest practicable date to the Executive Board for consideration and action."

The improvement of sales methods for the purpose of retaining and expanding the domestic load was the theme of the Commercial Section meetings. Philip Cabot, of the Harvard Graduate School of Business Administration, Cambridge, Mass., spoke on this thought before the general session on Wednesday morning. His topic was "Selling All the Gas That Should be Sold in the Home."

Professor Cabot also discussed the rate problem, claiming that the development of the domestic load depends on the parallel development of equitable rate structures. The rate question was again considered before the general sessions by C. S. Reed, consulting engineer, New York, N. Y.

Probably the most significant act of the convention was the passing of the following resolution regarding the work of the A. G. A. Testing Laboratory at Cleveland, Ohio, at the final business session, Thursday morning, October 14.

TEXT OF RESOLUTIONS

Whereas the Association recognizes that our duty to the public we serve, as well as our own interest, demands undivided and wholehearted support of our Appliance Testing Laboratory and its program which has the full cooperation of the United States Bureaus of Standards and Mines and the Public Health Service, be it

Resolved first that it is the sense of the American Gas Association in convention assembled that no gas ranges or flexible gas tubing which do not bear the Laboratory seal of approval will be sold or offered for sale by any member gas company;

Resolved second, that since in the judgment of this Association it is essential that to make available to the American public at the earliest possible date a full quota of tested and approved appliances, every member gas company is requested to notify manufacturers of ranges and tubing of their adherence to the policy stated in these resolutions.

Resolved third, that it is detrimental to the best interests of the public and the gas industry that appliances or tubing not qualifying for American Gas Association standards be made or marketed, and we deplore and disapprove any such practice; and

Resolved fourth, that the Executive board be requested to consider the adoption of a policy which will make the purpose of these resolutions effective both as to gas companies and manufacturers.

A. G. A. leaders feel that the work of the laboratory has reached the point where action such as this is not only advisable but necessary.

A. B. Macbeth, President-elect, A. G. A.—stepping up to claim the crown

Geo. K. Burgess director, Bureau of Standards, Washington, D. C., spoke on the work the laboratory is doing in his address, "Perfecting Service and Safety." The Commercial Section also devoted considerable time to this question, and an interesting discussion followed R. M. Gallagher's paper on "The Commercial Aspects of the A. G. A. Laboratory." Mr. Gallagher is chairman of the Laboratory Managing Committee and president of the East Ohio Gas Company, Cleveland, Ohio.

R. M. Conner, A. G. A. Laboratory director, presented some important aspects of the Laboratory to the manufacturers of gas appliances at their section's meeting the first day of the convention.

The Publicity and Advertising Section held a conference on national advertising. Two addresses, one by Joe Carmichael, director of the Iowa Committee on Public Utility Information, and the other by W. S. Lockwood, advertising manager, Johns-Manville Company, Inc., New York, N. Y., were the features of the meeting. James O'Shaughnessy, executive secretary, American Association of Advertising Agencies, New York, N. Y., spoke before the general sessions on the topic of advertising.

NATIONAL ADVERTISING FOR GAS

Although no official action was taken by the convention, the consensus of opinion was that the gas industry will advertise nationally sometime in the near future. A survey is to be made during the winter and early spring, and as soon as the results are made available, there will come the decision as to when and what to advertise to the American public.

No running account of the convention can give a suitable picture of what happened in Atlantic City. To sketch the highlights would be to tell in detail what every speaker had to say. The most careful reading of the reports and papers and the most carefully prepared article on the convention will fail to give a proper picture of what the real convention was. There was a spirit among the gas men that has never been equaled before. Fired with the ambition to place their industry on a high plane, the gas men are pushing forward. Every idea that was brought out by the Three-to-Five year program committee was amplified and enlarged upon at the convention.

Bernard J. Mullaney, vice-president, The People's Gas Light and Coke Company, Chicago, Ill., gave the correct view in his closing remarks at the last general session.

OPTIMISM IS KEYNOTE

He said: "We are about to wind up the most successful convention the gas industry has ever had. That statement is corroborated by the registration figures, and by the splendid exhibits with which we have been surrounded all week, and which in number and character far surpass any assembly of the kind ever before put together.

"It seems to me the success, the outstanding success, of this convention is further reflected in the programs, both general and sectional, which we have had

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WESTERN DELEGATES WALK THE BOARDS AT ATLANTIC CITY

Groups read from left to right. (1) W. S. Dole, Tucson Gas & Electric Company, Tucson, Ariz; Mrs. Arthur Prager, Albuquerque, N. M.; Grace Jo Mason, Tucson Gas & Electric Company, Tucson, Ariz.; Arthur Prager, Albuquerque Gas & Electric Company, Albuquerque, N. M. (2) F. H. Holden, Southern California Gas Company and Midway Gas Company, Los Angeles, Calif.; Jay E. Jenkins, publisher of WESTERN GAS, Los Angeles, Calif.; A. B. Macbeth, Southern California Gas Company and Midway Gas Company, Los Angeles, Calif.; F. M. Banks, Southern California Gas Company, Los Angeles, Calif. (3) Lee B. Mettler, Lee B. Mettler Company, Los Angeles, Calif. (4) A Public Service Company of Colorado group, all from Denver, Colo. They are: A. A. Klinge, Geo. Wehrle, R. G. Munroe, R. H. Taylor, William Virtue. (5) A. B. Day, Los Angeles Gas & Electric Corporation, Los Angeles, Calif.; R. W. Miller, Pacific Lighting Corporation, San Francisco, Calif. (6) F. W. Steere, Steere Engineering Company, Detroit, Mich.; D. W. Wilson, Wilputte Coke Oven Corporation, New York. (7) D. J. Young, H. M. Byllesby Corporation, Tacoma, Wash.; W. M. Thompson, Reliance Manufacturing Company, Pasadena, Calif. (8) A. B. Macbeth, Southern California Gas Company and Midway Gas Company, Los Angeles, Calif.; J. F. Parker, Geo. D. Roper Corporation, Rockford, Ill.

Breaking *into* Print *With* Appliance Sales Messages

By B. F. HAWES
Pacific Gas & Electric Company
Gas Sales Department
Colgate Division

IN these hectic days of million dollar prize fights and the big football games, the art of breaking into the news columns with matter designed to sell merchandise is becoming more difficult, and calls for the exercse of tact, patience and perseverance.

The time is past when the fellow who has something he would like to put over can rush into the newspaper office, and by the promise of a paid advertisement lay a ream of "canned news copy" upon the editor's desk and hope for results. Even the editors of the smallest weekly have become so indifferent to the efforts of those who would fill their columns with free matter that they frequently throw into their waste baskets as many as 100 letters a day that have come to them in the guise of news.

Because of our success in this division in procuring the cooperation of the newspapers, we have been asked to give a few suggestions upon how we work. Upon reviewing the matter in an attempt to analyze the "how" and the "wherefore," the problem reduces itself to a few simple factors.

Of these factors friendliness with the advertising managers and editors is of the greatest importance. A friend will often do things for you, and help your game along where a mere acquaintance would not. This contact must be formed if the hoped-for results are to follow.

The newspaper editor and the gas company man are both public servants, but at the same time both have something to sell. The newspaper man has his space to sell, and he is generally anxious that this space sold should be productive of sales of the merchandise which his client is advertising. Once the idea of merchandising is obtained by the newspaper man, it then becomes a comparatively easy matter to obtain his cooperation in publicity.

NEWSPAPERS MUST SELL COMMODITIES

In our case up here in the Sacramento Valley we found that gas appliance advertising increased in proportion to the amount of gas appliance sales, and this has tended to make newspaper publicity easy to obtain. Each additional gas appliance unit sold meant just that much more business for the newspaper men, and they were quick to see that the pioneering in appliance sales must originate with themselves, rather than with the individual merchants, whom, it oftimes happens, were not aware of the potentialities of newspaper advertising.

Remembering that the newspaper editor and the gas company man are both public service men and the friendship may be very close, still we must not lose sight of the fact that the publisher is gaining his livelihood by printing news that is of interest to his readers. Therefore, the casual news story must contain either human interest or local interest. People like to see their names in the local papers. Consequently an article that carries the name of a local person is usually an interesting one. Local interest may be obtained through community pride, such as that in gas extensions, or an increase in meters during a certain period — all of which stress the growth of the community.

More and more publicity is coming through merchandising campaigns. All domestic appliances are sold through the dealers in the Pacific Gas & Electric Company's territory. Therefore, it is imperative that the newspapers, gas appliance dealers, and gas company work in close harmony for successful results.

GETTING MANUFACTURERS' SUPPORT

Before a campaign is started it is well to secure the support of manufacturers and see that mats, stereotypes, and publicity illustrative matter are ordered at least two weeks in advance. The next step is that of the gas company, to ascertain from the newspaper men what dates are most desirable, so that there may be no conflict with other events.

We have obtained promises from advertising men for dealer publicity by obtaining dealer ads. The next step is to approach the dealer with promises of publicity and secure assurance of paid space. It is far better to have a 100 per cent representation among the dealers; a small space is better than none. If the advertising departments are assured that the necessary space will be contracted for they will usually take care of the rest. Leave the make up of special newspaper pages to the advertising men. That is their business.

Create newspaper interest in the campaign by such events as High School cooking contests, ad writing contests, home demonstrations and public cooking demonstrations in stores. All of these furnish wonderful opportunities for publicity-news stories that newspapers are willing to publish.

The cooperation with other agencies such as various food products and fixture companies results in more angles to a campaign, which means more dollars for the newspapers and more publicity for gas appliances and gas companies.

TECHNIQUE OF PREPARING COPY

Here are a few practical hints on preparation of copy:

Write your material yourself if possible, double space on a typewriter, using one side of paper only.

Turn in material to the newspaper four or five days before it is to run. Composition in small newspapers is difficult; linotype machines are expensive and operators work at high speed. Remember that material that comes in late must compete with live news.

Don't write headlines. It is a tough job and one that newspaper men prefer to handle themselves, as there are necessary mechanical restrictions which must be observed.

Instruct the publisher to cut your copy if he so desires.

Supply mats or electrotypes for space when possible. Newspapers will accept material which does not require hand composition, even under adverse conditions. Electrotypes are best.

Under no circumstances rush the printer. He works under high tension and is sometimes very irritable.

Figuring comparatively on the number of meters installed we have secured more publicity on Gas Appliance Weeks in this section than in any other part of California.

APPLYING PSYCHOLOGY

On our gas furnace campaign two years ago we took pictures of all the homes and public buildings in town which were heated by gas, and had a group picture made. This picture was printed in the newspaper in the center of a double page ad, the surrounding space being paid for by the dealers in proportion to the number of installations they had made. The cost of the halftone cut was made part of the cost of the double page ad. The names of the owners of the homes were likewise printed. This double page ad ran once a week for three consecutive weeks. The effect of this stunt was to help keep the user of a new gas furnace sold on it

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It avails nothing to have a good program if the crowd is not there to appreciate it. The program arranged on the evening of October 27, for the above-pictured 500 members of the Los Angeles Gas & Electric Corporation's Employee Association was a good one, and the methods followed in getting out the crowd were good too—witness the "capacity house!" A story of the program was run in the company's employee publication, and four bulletins were issued, two of them directed to employees and two to department heads. In this case the principal feature was a discussion entitled "The Law Aids the Vigilant—Watch Your Step," by Samuel Poorman, Jr., of the Corporation's legal department. It is evident that he had an interested audience.

Employee Meetings *that* "Get Over"

By D. L. SCOTT
Manager Public Relations,
Los Angeles Gas & Electric Corp.

HE who would attempt to give a set of hard-and-fast rules for holding employee meetings would be a hardy soul indeed. Or a foolhardy soul!

The writer therefore wishes to be understood as only setting down, in more or less coherent fashion, his own experiences and some conclusions that would seem to be justified from those experiences.

There are at least three cardinal virtues that must appear as prominent ingredients in the employee program mixture if it is to be successful. There are doubtless many others that may be stirred in as as occasion or taste may suggest, but there's no getting along without these three:

1. Sincerity
2. Purpose
3. Interest

It doesn't pay to try to kid your audience as to what you are driving at. If your meeting is called to promote some part or feature of the program of the company, it is a tactical mistake, as well as doubtful morality, to try to camouflage it as something entirely for employee benefit.

Employees generally are interested in the welfare of their company. They recognize that it is reasonable and fair to the company to state its needs and problems and to ask employee assistance in working them out. And the company leader who fails to take advantage of this fact and becomes apologetic when he has a company matter to present to the employees, is weakening his case and by his very position creating a lack of confidence which normally does not exist.

In our own organization, the employees themselves have shown their mettle on various occasions. As a recent instance, the ideals of co nduct prescribed, in a series of meetings, by the members of the force for their own public contacts were as severe as the most enthusiastic manager would have outlined in laying down the law to a new salesman or collector.

Trust the employee body to be friendly to the company management and sympathetic with its aims. Plan your meetings on that premise. Be sincere.

It is a great mistake to call a meeting of employees on a trivial pretext. It has been our experience that it is not difficult to get a crowd out for an evening meeting if it is for a worth-while purpose. But there is grumbling—and justly—if the audience has been brought out for a "fool's errand" or what it considers an unimportant or mediocre program. The meeting may be for serious discussion or for entertainment or for a mixture of the two; but if it is to make a hit with "the bunch" it must have merit.

No one enjoys being treated like a kindergartener or a moron; if he is invited to an evening of bunk and slush he is just naturally bound to crab about it a little to maintain his self-respect.

Even after you have built your program with a sincere mind and a worthy purpose, it may, and probably will flop in the delivery unless precaution is taken to make the performance interesting. A dull presentation of even an important subject never makes a hit.

The very simple and obvious preventative of such a calamity is to see that only interesting speakers are on the program; and to make sure, if possible, of having a live, snappy chairman.

If a chairman is witty—within reason—that's fine, although it is not so essential as that he speak clearly, loudly enough to be heard, and to the point. Too many chairmen are burdened with

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Success *in* Advertising

By J. LYLE VANCE
Advertising Manager,
Payne Furnace & Supply Company

ADVERTISING to be successful must create a desire for the product advertised and cause that desire to spur the prospect to the act of buying. It may be that the time of action is, of necessity, delayed owing to circumstances, but the advertising to be effective in this case must leave a subconscious impression so that when the right time comes the prospect will accept the goods. To accomplish this it must be read.

To make advertising effective human nature must be understood—call it psychology if you like—and the advertising must be prepared to sound a responsive chord. No matter what we might like to see in print to please our own ego, this impulse must be put down and kept down.

THE "EYE" APPEAL

We humans are today, and always have been, an "eye" people. Some there are who argue that this is a twentieth century development of the human race. It is not, and the movies have little to do with it; they are only in line with the reaction. I refer you to the ancient writings of all but forgotten peoples. The cave dweller drew and carved pictures on the walls of his caves to tell the story of his prowess in the hunt. What is the first impulse of the child as soon as he can handle a pencil? It is to draw a picture. Today we are just getting over the newness of the acquired art of telling stories by means of written words instead of by pictures. We are getting back to fundamentals. To plan successful advertising is to recognize this and keep it always in mind.

We are a dramatic people. If our advertising is to strike home with telling force, our advertising must be dramatic — not melodramatic — with our prospect always as the hero. That the drama must have a happy ending goes without saying, for if we are to put our prospect in the star role and if we wish later to painlessly extract the money from his bank account we dare not antagonize him by doing otherwise.

As an example let us examine the advertising of the most highly developed industry of the world. I speak of the automobile industry. Taken as a field it is head and shoulders above all other fields. Its advertising is alive, it vibrates, it appeals to you and to me. It conjures up the most pleasant pictures imaginable. It compels us to desire a truly fine automobile, to desire the romance and the thrill of luxurious, vibrationless transportation. We have only to look around us to see the wonderful results it has wrought, and it has all been accomplished since specifications as to construction have been subdued or omitted, for with such a drama and such stage setting we take it for granted that the specifications are right to accomplish such results.

¶ The man who writes successful advertising "copy", says the author of this article, must:

Know human nature.
Appeal to his prospect's eye.
Put across a message that is dramatic.
Avoid argument.
Avoid boastfulness.
Avoid the abstract.
Hold the reader's welfare ever uppermost in mind.

HOW IT WORKS WITH AUTOS

Note how the stage is set. The picture, or illustration in the first place is dramatic, the background is elegant, the people are prosperous, successful. You look at the picture, the people are you, the mansion is yours, you are thrilled. You feel yourself stepping into the machine, you feel it respond to your wishes, you feel yourself whisked away over the boulevards, through the crowds of successful people who envy you as you pass. The urge is strong to realize the drama you are dreaming, and you buy so that your dreams may indeed become a reality.

This is the type of advertising which, having done so much in this field, may well serve as a pattern.

Dig into the merits of your product until you have found a dramatic idea—an idea with live, human appeal, and then build your advertising on this idea. The rest is easy after the big idea is isolated. Make this idea the trunk of your advertising, for if you fail in this the whole effort will be spineless, aimless, and of no effect. Simmered down, the object of your advertising must point out above all things just what service the reader can fully expect to get from his purchase, just what your product can do for him, and how greatly to his advantage it will be to possess it.

Argumentative advertising arouses in the minds of the reader the idea that the argument must be a smoke screen to hide some hidden defect. At once your precious prospect becomes suspicious and overcautious, and you have in nine chances out of ten lost him. Your advertising has defeated its very purpose.

SUBORDINATE THE "EGO"

Stressing the bigness or the importance of the advertiser is very easily overdone. Just as we shun the braggart in real life, so does the prospect shun the advertising braggart. Of this type of advertising the prospect becomes suspicious.

Do not misunderstand me in this. I realize that the simple statement of the resources of the advertiser, the years of his successful business career, or the number of users of his product, are valuable parts of his advertising, but they are strong medicine and must be used with great discretion. Going into these points at too great length will cause the reader to weary of them. He is vastly more interested in himself 99 per cent of the time and will refuse to get excited and rush with his money to fatten the advertiser's coffers just because the advertiser is a great duck in his puddle.

Test the wording of your advertising to see if it rings true and sincere; see if it is written from the "man to man" angle with always the prospect's welfare and interest uppermost. See that it is not stilted and highbrow—for what sales-manager would tolerate the salesman who habitually used a formal, impersonal tone and who affected highbrow manners. Such a salesman simply could not put the deal across, and neither can this type of advertisement.

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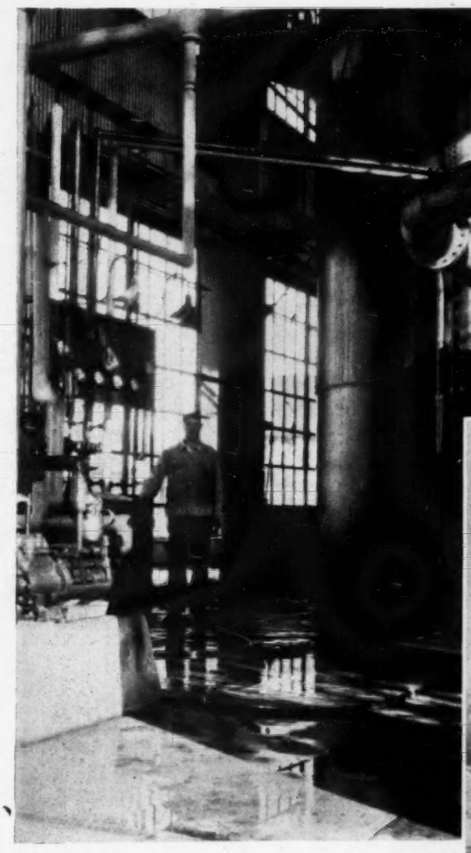
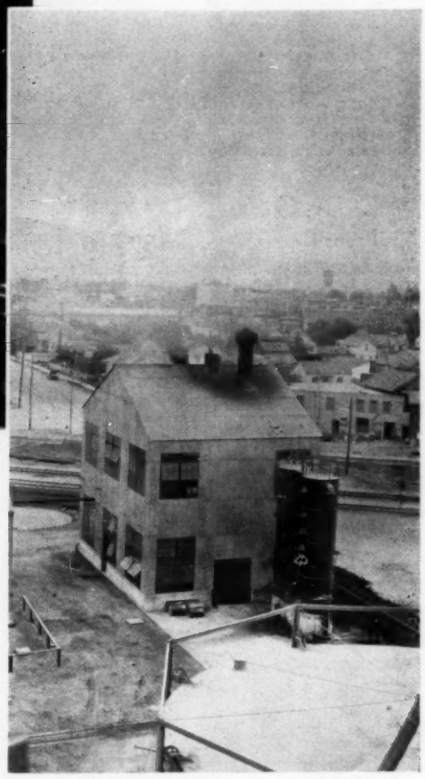
Modern Appointments *in a* Small Plant

By J. E. KELLEY
General Superintendent, Gas Department, Western States Gas & Electric Company



LEFT: Operating control board and generator in the new plant of the Western States Gas & Electric Company at Salinas, Calif. LOWER: A bird's eye view of the new plant, taken from the top of the company's new 200,000 cu. ft. holder.



WHEN the Byllesby Engineering & Management Corporation took over the Coast Valleys Gas and Electric Company and started to improve the distribution systems in Salinas and Monterey, California, the gas output in the Salinas District got to a point where the problem of more holder and generator capacity faced the officials of the company. The plant had a storage holder capacity of 30,000 cubic feet which gave 3½-inch pressure. With the old plant the operator had the experience of seeing this holder floating only three feet above the water during the peak.

A lot adjoining the gas plant property was purchased and a contract let to the Chicago Bridge & Iron Works for a 200,000 cubic feet two-lift gas holder. This holder was designed to give 10 inches pressure with both lifts up. A Connelly Automatic Governor was installed at the outlet of the holder to reduce the pressure to eight inches, which is the pressure carried on the distribution system.

A Sturtevant booster was also installed so that the pressure could be maintained in case the holder uncupped. The new holder was completed and put in operation the latter part of last year and the 30,000 cubic feet holder changed into a relief holder, as the plant did not have one before the new holder was installed.

After the drawings were completed for the holder the engineering department got out drawings for the new gas plant which included new building, generator, scrubbers, lampblack separators, boiler and the necessary miscellaneous equipment. The new building was designed to house two generators and is a steel frame building with corrugated iron sides and roof. It has two rows of windows, one row being at the regulation height and the other near the top, which gives excellent light throughout the building. All of the window frames are Fenestra steel sash and one section of frame is center-pivoted sash, mechanically operated, so they can be opened to ventilate the building by simply turning a crank from the floor level.

The generator is a nine-foot "single shot" generator and is designed so that by adding another shell it can be changed to a two-shell generator using the present generator for the secondary shell. The lining is 14¾ inches and laid with ¾ inch of insulating powder, five inches of insulating brick and nine inches of fire brick. The generator is heated from the bottom, and is heated with a Snyder burner set in the center of the blast tee. The generator has a heating burner on each side of the blast tee, but it has not been found necessary to use these. The combustion space was made larger in order to protect the arches. The arches were laid with specially shaped brick so they would make a snug fit. The operating table is arranged so that all the valves and fittings are handy to get at for repairs. Along with the necessary valves and meters, the scrubbing water and the blower are controlled from the table.

SCRUBBERS

Two scrubbers 6 x 30 feet were installed on a foundation three feet six inches above the floor level so that the water would flow by gravity to the lampblack separators. Between the scrubbers is the seal which was made part of the foundation, arranged so that the tar is drained to a tar well under the floor close to the scrubber foundation and the water flows to the flume from the wash box.

As the waste water from the plant flows to the city sewer it is necessary for it to be clean before it enters the sewer. Two concrete lampblack separators 9 x 30 feet were installed. These were constructed so that the water from the lampblack passed through sand and gravel placed in the bottom of the separators, giving clear water at the outlet of the separators. A track was laid between the separators and the lampblack is shoveled from the separators to small dump cars which are pushed to the boiler room and the fireman shovels the lampblack from the cars to the furnace.

To increase boiler capacity a 150 H. P. Casey-Hedges boiler was installed,

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Legislation *and* Taxation

PART II

¶ Last month was published the material referring to legislation, contained in the 1926 report of the P.C.G.A. committee on legislation and taxation, which consisted of Norwood W. Brockett, C. P. Cutten, Rufus G. Gentry, Paul Overton and Geo. L. Myers (chairman). This second installment, which concludes the report, deals with taxation.

By GEO. L. MYERS

Chairman Committee on Legislation and Taxation, Pacific Coast Gas Association.

TAXATION is an ever present problem to the individual and industry. The mounting costs of government, particularly of the states and their minor subdivisions, constantly accentuate its importance. The National Industrial Conference Board reports that the volume of taxation expressed in "1913" dollars has increased from $22.73 to $47.42 for the period from 1913 to 1924. The same authority reports that the percentage of taxation to national income increased from 6.9 per cent to 12.5 per cent during the same period. The total volume of taxation per capita in 1921 expressed in the dollar of today was $77.55 and the per capita individual income of that year was $779. Hence the individual's tax contribution on the average represented almost 10 per cent of his income.

These are truly startling revelations. Our burdens of taxation cannot continue to increase as they have during the 12-year period of comparison without dire consequences to our social and economic order. If our present order is to be maintained and strengthened a policy must be pursued which will encourage individual enterprise and thrift in the creation of new wealth rather than repress such enterprise and thrift by paternalism and unwarranted interference with legitimate individual economic pursuits. The potential stress of world-wide competitive conditions will compel this kind of a policy.

TEN CENTS OF EVERY DOLLAR

Reports from the larger gas companies in Arizona, California, Montana, Oregon and Washington disclose that almost 10 cents out of every dollar is contributed to the government in taxes. This probably is the average of all gas companies in the western states.

Our public utilities do not seek to evade their just share of taxes. It is a fact that though 10 cents of every dollar may be the average tax, nevertheless under the property tax the tax burden is disproportionately borne because of the more or less arbitarary nature of this form of taxation. What the public utilities, like all industries, strive to attain is an equitable distribution among themselves and by comparison with other industries. It should be their united objective to bring about a uniform policy for taxation among the various states of the Union. This is particularly desirable in view of their inter-state operations and the ever increasing tendency in this direction in the physical extension of their service and growth in the acquisition of new propertes. Governmental control of the service of our public utilities and the virtual absence of competitive conditions give them a status different from that of the unregulated and competitive industries. The determination of the value of their useful property and the limitation of what may be earned to a reasonable return upon such value preclude ordinary inflation or deflation of values in response to changing economic conditions, so that their exchange or market value is largely determined by their earnings.

These conditions justify serious consideration of a taxation policy based on earnings in the interest of greater equity, simplicity, understanding and uniformity.

RATE-MAKING BASIS INEQUITABLE

Legislation has been proposed in a number of states to provide that the value fixed for rate-making purposes should be the value fixed for the purposes of taxation. This theory without analysis seems plausible. Such a value would serve both purposes equitably if the necessary fair return were uniformly earned upon the so-called rate base. However, this condition does not prevail. Take for illustration the case of two companies of like cost and rate bases, one serving a territory highly developed and the other a territory largely undeveloped. There is a maximum beyond which rates cannot go and still maintain the prevailing volume of business. The company with less revenue would pay as much as the company with the greater revenue, while the property of the company with the greater revenue would naturally have the higher market value. Again, such a theory in practice would tend to restrict property additions often required for service with revenues only sufficient to cover the costs of operation and fixed charges or remote in the possibilities of an adequate return.

Furthermore, our public utilities to live up to their obligation must anticipate community growth and be ready to meet demands for their service. They cannot with good economy provide adequate capacity on a piecemeal or hand-to-mouth basis, nor could they do so and be secure in their ability to meet demands as they arose. It would be obviously unjust for a company whose added investment in capacity had not reached a revenue-producing status to be taxed as much as a company whose investment had reached such a status. The company pioneering would be, in fact, penalized in its developmental stage when every encouragement ought to be given to it.

EARNINGS TAX ADVOCATED

An earnings tax would be not only more simple in its administration, but it would eliminate from the industry the arbitrary determination of property values from year to year which are variable with the judgment of the ever changing personnel of the assessors. Such an earnings tax could be so calculated as to maintain proper accruals. The simplicity of such a tax would serve to bring about a better understanding on the part of the public of the influence of taxes upon the costs of operation and their factor in the charges for service.

It is contended by those opposed to an earnings tax that such a tax would

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The Pros and Cons *of* Pipe Laying *in* Advance *of* Paving

By W. M. HENDERSON
Superintendent, Gas Distribution, Los Angeles Gas & Electric Corporation

THE suggestion has occasionally been made that gas service pipes should be installed prior to street improvements to supply prospective buildings on existing vacant property.

Without a consideration of the facts, this seems a very reasonable recommendation. An analysis of all the facts involved is necessary, however, before it is safe to make a definite recommendation.

Summarizing an investigation undertaken for the Los Angeles municipal Sub-Surface Committee by a special committee of which Mr. Henderson was chairman, this report presents many problems encountered in laying gas service pipes to vacant property prior to street paving. The subject is considered under the following heads: Effect on gas distribution design — Investment; who will finance?—Present record on idle property services—Capital burden—Alternative suggestions—Recommendations.

EFFECT ON GAS DISTRIBUTION DESIGN

A. Direct service connections: Practice requires the installation of a service to be determined by the selected location for gas meter. This permits the gas service to be installed so that it will be extended from main to meter in a straight line without a break.

Internal corrosion of pipes is responsible for deposits existing in gas pipes. Service pipes are small, average size about 1¼"; the deposits, therefore, require occasional removal to avoid stoppage of gas supply. The service pipe can be cleaned conveniently only when same is installed as a straight pipe from the gas main to meter. The method of cleaning requires the use of a wire which could not be operated if fittings were used or service pipe broken from a straight line.

B. Double services: Each individual premises requires an independent service pipe. One service pipe cannot be safely installed for serving two lots, as is the present practice of the water companies. The reason for this is obvious, for if different premises were served from the same service the fact would not be apparent by inspection on the premises. Therefore, on complaint of poor service from one premises, the complaint man would attempt to clear the service pipe, and in so doing would interfere with the gas supply to the adjacent property. In case party next door was using gas or appliances were equipped with pilot light, the interference would prove disastrous, as in either case gas would be extinguished, thereby possibly causing a serious explosion.

C. Meter locations: Present type gas meters must be located above ground and preferably in a sheltered location. Unlike a water meter they cannot be fixed in the parking of the sidewalk.

If service pipe is installed to idle property prior to plans for improvements, there is no assurance that meter locations will be suitable at location where service pipe will enter property. There are no possible means for fixing the location of the meter until such improvements are definitely determined. If present owner of property agreed to a selected location, such act cannot be made binding on new owner in case property changed hands.

An ordinance could be drawn to provide for installation of services to idle property and fix the location of the gas meter. However, this may not prove satisfactory, as it will not allow for change of building plans on a change of ownership of property.

D. Service size: Proper size of service pipe is dependent upon two factors—demand for gas, and length from gas main to meter location. Size of service pipe to idle property cannot be selected with any assurance of serving its purpose unless both these facts are known. To insure satisfactory gas service, then, it is apparent that the type of building should be known before determining size of service.

E. Service maintenance: Service pipe installed to idle property will be under pressure in anticipation of use. These services will be non-productive, but, nevertheless, will require maintenance and may prove a burden to operations due to possible leaks. Service pipe is the lightest weight pipe entering the gas distribution system. It also represents in linear feet more pipe than is installed for gas mains. For some unaccounted-for reason idle services deteriorate at a faster rate than active service pipe.

Installation of services to vacant lots will increase considerably the total service pipe installed, and, therefore, represents an additional operating expense in the form of maintenance.

INVESTMENT; WHO WILL FINANCE?

The cost of installing idle property services is a burden that must be paid for either by utility or property owner.

A. If by utility: The cost would be a proper charge to capital account. This would result in an increase investment in operation, but non-productive plant. The fixed charges, interest and depreciation, must be supported by rates paid by active consumers. The fairness of this is best determined by consideration of the benefit such consumers actually receive from idle services. This benefit is so remote that a protest would be in order as soon as the investment became a heavy burden.

In establishing a rate base there may be a question on the part of the California Railway Commission as to the allowance of an expenditure for the idle services as a proper charge to operating capital, in as much as it does not produce revenue. This fact must be considered, as over a period of years it will amount to a considerable sum, as will be set forth later.

B. If paid by property owner: By ordinance the cost of installing services to idle property could be shifted to property owner. This would not relieve the utility as its operating cost would not escape certain charges, such as maintenance charges, which must be borne, as well as possible losses of gas through leaks developing in service pipe after a period of idleness.

It appears, however, a reasonable suggestion to place the burden of first cost on the property, for if there is any benefit to be derived by laying service pipe ahead of street improvements to idle property, such may be considered as enjoyed by the property owner. If the service became active in a reasonable time the cost could be refunded by the utility.

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PACIFIC COAST GAS ASSOCIATION

A Department Conducted by Clifford Johnstone, Executive Secretary

Central Regional Meeting Next on P.C.G.A. Calendar

DATE—*Thursday, November 18*
PLACE—*Fairmont Hotel, San Francisco*

TENTATIVE PROGRAM

9:30 A. M.-12:00 Noon—*Technical Conclave*

Discussion of plans for the year's Committee work and of the problems assigned to committees as contained in the circular recently sent out to all members by the Secretary. The discussions will be led by R. M. McCalley, Chairman of the Technical Section, Frank Wills and R. S. Fuller, and will be open to all present. Be prepared to parade your pet theories.

The new Marysville Water Gas Plant will be described and an opportunity given for discussion and questions.

12:30-2:00 P. M.—*P. C. G. A. Luncheon*—$1.25 per plate.

Short talks by prominent gas men —music—stunts and jollity.

2:30-5:00 P. M.—*Commercial Conclave.*

The same procedure as in the morning. Discussions lead by C. M. Grow, Chairman of the Commercial Section, F. U. Naylor, Lew Galbraith and Frank Talcott.

The A. G. A. Laboratory and Blue Star Plan will be described and an opportunity given for discussion and questions.

TO INSPECT MARYSVILLE PLANT

On Friday, the day following the meeting, the Pacific Gas and Electric Company invites Association members from other companies to inspect its new water gas plant at Marysville. The best and most comfortable way to go is via boat to Sacramento, leaving San Francisco at 6:30 P. M. on Thursday. Dinner and breakfast are served on the boat and Sacramento is reached in time to take an electric train which arrives in Marysville at 9:20 A. M. Friday. The return trip can be started either at 1:20, 3:16 or 6:10 P. M., arriving in San Francisco at 5:55, 8:15 or 11:15 P. M. respectively. All of these trains have parlor cars and diners. The Secretary will take care of boat reservations for those who desire to visit this modern gas plant.

It Pays to Organize

Did you notice that Los Angeles Gas and Electric Corporation men won first, second and third places in the Three Minute Speaking Contest at the Convention? We want to be sure you do notice because there is a reason. It can be traced to the influence of the Los Angeles Service Group of the P. C. G. A.

Upon hearing of the Contest, the leaders of the group saw an opportunity and forthwith called a meeting which resulted in a public speaking contest within the group with the same subject and the same rules as the main Convention contest. This not only served as an elimination contest but it gave the boys practice with the very excellent results mentioned above. It pays to organize and squeeze every bit of benefit out of your Association membership.

A Good Thing to Copy

The Michigan Public Utility Information Bureau has sponsored for three years an annual "Open House Week" among the Public Utilities of Michigan. The results have been very gratifying from a public relations standpoint, as there is nothing like a personal inspection of the other man's place of business and a visualization of his job to create confidence and respect for what he is doing.

The first week, some 16,000 men, women and students visited the plants of the companies participating. The second week this increased to 35,000 and the third week is expected to register a proportionate increase. During the 1925 week some 60 per cent of the luncheon clubs in the state had speakers drawn from the public utility ranks, many of the clubs visiting the gas and electric plants in a body.

This is a movement well worth studying and copying, either as a coast wide effort or as a local company activity.

PANAMA GAS MAN TURNS AUTHOR-COMPOSER

S. Paul Vecker, Vice President of the Panama-Colon Gas Company, had an article in the July issue of the Pan-American Magazine on the History of the Rotary Club of Panama. Mr. Vecker is also the author of the song, "Gas! Gas! Gas!" which was featured at the recent convention of the American Gas Association.

A Novel Way to Collect Delinquent Accounts

A Wisconsin company has recently filed with the State commission a rather unique rule covering the collection of delinquent accounts. The customer is given the option of (1) Paying his overdue bill in full, (2) Having service discontinued, or, (3) Accepting a prepayment meter so set as to require a greater deposit than the legal rate, the excess to be applied on the delinquent bill. No complaint has resulted from the practice.

The Commission has approved the rule provided full information is given the customer at least three days before the prepayment meter is set and the customer must also be supplied at intervals of not more than three months with statements as to the balance still due the company.

Have You Volunteered for Committee Work?

At the time this is being written it is impossible to prophesy either the success or the failure of the new plan for committee organization explained in the circular recently received by all Association members. Just as volunteer soldiers fighting for a sacred cause are unbeatable, so should volunteer committeemen working on their pet hobbies produce reports which will be a credit to themselves and the Association and of great value to the gas industry. It all depends on volunteers. Have *you* sent in your preference?

Load Factor Committee

Technical Section Chairman W. M. McCalley has reappointed W. M. Henderson as Chairman of the Load Factor Committee, and Mr. Henderson has in turn asked those who served with him last year to continue the study. These include A. R. Bailey and R. C. Boughton of the Los Angeles Gas and Electric Corporation, L. L. Biggs and S. C. Singer of the Southern California Gas Company, W. F. Pape of the Pacific Gas and Electric Company, Otto Goldkamp of the San Diego Consolidated Gas and Electric Company, and C. G. Fiscus of the Western States Gas and Electric Company.

Tentative Definitions Offered *for* Discussion

By R. M. McCALLEY
Chairman, Technical Section,
Pacific Coast Gas Association

THE Technical Section of the Pacific Coast Gas Association submits the following tentative definitions referring to load and demand situations, with the request that they be fully criticised before final adoption. It is the present plan to submit these definitions, with such modification as may be required, at the next convention, with the request that they be adopted as the official nomenclature of the Pacific Coast Gas Association. The origin of the various definitions is indicated by the parenthetical notation immediately following the term. Those terms marked (P.C.G.A.) originated from the discussion by the Load Factor Committee of the Pacific Coast Gas Association held during the recent convention at Pasadena. Those terms marked (A.G.A.) are the recommendations of the Rate Structure Committee of the American Gas Association.

The Load Factor Committee of the Pacific Coast Gas Association took exception to the definition suggested by the American Gas Association covering the term "demand." The specific objection applied to the use of the term "24 hour demand" is on the grounds that demand is the rate of flow expressed in cubic feet per hour and that the term could not therefore be used explicitly to define the requirements for a period greater than one hour.

Both definitions are included in the following listing covering the term "demand." Discussion is particularly invited to the end of determining which of these two definitions should be finally adopted.

Agreement, except for minor details which are of little consequence, was secured with respect to the definitions for all other terms.

RATED CAPACITY (P.C.G.A.)

The total volume of a specified specific gravity and B.t.u. value gas, expressed in cubic feet per hour, used by all of the burners on a given appliance, operating wide open and under specified pressure, based on the manufacturer's or a laboratory rating.

CONNECTED LOAD (P.C.G.A.)

The total volume of a specified specific gravity and B.t.u. value gas, expressed in cubic feet per hour, used by all of the appliances connected to a given installation when operating at full capacity, under a standard pressure with an adjustment made to fulfill the requirements of that particular installation.

IN submitting this material for the Technical Section Mr. McCalley writes Western Gas the following explanation of the purpose underlying the publication of these definitions:

"The work of many of the committees of this Association has been handicapped by the confusion resulting from the lack of standard definitions pertaining particularly to load and demand situations.

"Several discussions were held during the recent convention at Pasadena and as a result of these discussions tentative definitions were adopted covering some of the terms most frequently used.

"The Rate Structure Committee of the American Gas Association has likewise felt the need of standardizing and as a result they have tentatively adopted definitions covering some terms.

"The Technical Section of the Pacific Coast Gas Association proposes to publish a complete set of tentative definitions including those proposed by the American Gas Association as well as our own Association. The purpose in publishing these definitions will be to secure criticism and discussion to the end of adopting final definitions for this Association during the coming convention."

RATED CONNECTED LOAD (P.C.G.A)

The sum of the rated capacities of all the appliances connected to a given installation.

OBSERVED CONNECTED LOAD (P.C.G.A.)

The connected load obtained by actually measuring the volume of gas used by a given installation.

INSTALLED METER CAPACITY (P.C.G.A.)

The sum of the capacities of the meters in a given installation, expressed in cubic feet per hour, with the ratings based on a one-half inch pressure drop for a gas of given specific gravity.

INSTALLED REGULATOR CAPACITY (P.C.G.A)

The sum of the capacities of the regulators in a given installation, expressed in cubic feet per hour, with the ratings based on stated inlet, outlet and lock-up pressures for a gas of given specific gravity.

DEMAND (A.G.A.)

Demand is the instantaneous, or respectively the average rate of flow of the gas within the period of time expressed in the prefixed time designation, as:

Instantaneous demand
Quarter-hour demand
Half-hour demand
One-hour demand
24-hour demand

For all periods of one hour or less the demand is expressed as the number of cubic feet which would flow in one hour if the average rate of flow for the prefixed time designation should continue without variation during one hour.

For periods of more than one hour the demand is expressed as the number of cubic feet which flowed within that period.

Demands on distribution and utilization capacity are expressed in cubic feet per hour; those on production capacity in cubic feet per 24 hours.

DEMAND (P.C.G.A)

Demand is a rate of flow, expressed in cubic feet per hour, calculated from an observed volume of gas flowing within a given interval of time; expressed as "instantaneous demand," "quarter-hour demand"; half-hour demand," and "hourly demand."

MAXIMUM DEMAND (A.G.A.)

Maximum demand is the maximum value of the specified (time-prefixed) demand, and should be qualified by stating the time interval examined for maximum demand as for example, maximum one-hour demand during the year, or maximum 24-hour demand between Nov. 15th and March 15th.

MAXIMUM DEMAND (P.C.G.A.)

Maximum value of a specified demand, qualified by a fixed time interval.

EXCESS DEMAND (P.C.G.A)

The difference between the maximum demand within any period and the average demand over that period both expressed in the same terms.

CO-INCIDENT DEMAND (P.C.G.A.)

The sum of the demands occurring simultaneously.

NON-COINCIDENT DEMAND (P.C.G.A.)

The sum of any group of non-simultaneous demands.

DIVERSITY FACTOR (A.G.A.)

Diversity factor for a designated time interval is the ratio of the sum of the maximum demands of the parts of a group to the maximum demands of the whole.

LOAD FACTOR (A. G. A.)

Load factor for a designated time interval is the ratio of the actual volume

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EDITORIAL

Refrigeration Means Advertising for Gas

THERE has been some tendency to become over-optimistic about the possibilities which lie in gas refrigeration, at least as far as concerns building up the summer slump in sendouts. Those "in the know" tell us that the refrigeration load will probably be relatively small, compared to other domestic consumption. This is not to say that there is ground for letting the refrigeration load languish for want of strenuous sales effort. Not at all; for *any* increase in sales per customer is much to be desired, and should be sought after through all the known means of sales work, and some means not yet discovered.

But there are other angles to this refrigeration by gas, which will bring returns to the gas company no less sure than the returns which come through the gas consumed in refrigerator operation. D. J. Young, in his discussion of refrigeration possibilities before the commercial section of the Pacific Coast Gas Association convention at Pasadena, pointed to one such angle. Gas refrigeration, says Mr. Young, means institutional advertising for gas. When the public is made to see that gas can meet electricity on its own grounds and perhaps come off with more than its share of honors, gas fuel will reap invaluable returns in publicity. Gas will claim its place in popular favor as a flexible, as well as economical, household servant.

Gas refrigeration can and should be exploited as an achievement by every gas company. Introducing other gas uses will be easier after refrigeration has been popularized.

And another phase of gas refrigeration is that of finance. Recognition of the gas industry's about face from its somewhat apathetic attitude on the development of new uses for its product is at hand. When gas refrigeration is actively in the domestic market it should react upon the acceptance of gas utility securities, comparable to the effect electric refrigeration had upon electric utility securities. It will be indisputable proof that the gas industry is passing no bets.

New Uses for Gas Should Be Capitalized

AT THE plant of the local Ford motor agency in Panama, R. P., new cars are being broken in by artificial gas, before delivery to buyers. While this practice is common in many localities, there are few companies which have realized as much desirable publicity on the strength of the new load as has the Panama-Colon Gas Company. Display advertisements and news publicity have both featured the new use, and the public has been enabled to attend demonstrations of the 'breaking-in" process—all of which has meant more friends for the gas company, and more prospects for the ideal fuel.

Just One Case Among Many

WITH a just show of pride the last issue of "Doherty News," official spokesman for the H. L. Doherty properties, points to the customer ownership record of one utility in the Doherty organization. The Public Service Company of Colorado has a total of 10,005 stockholders. Of these, 80 per cent are residents of the State of Colorado, and hence consumers of the company's products. Add to this number the 4,450 Colorado stockholders of the Cities Service Company, which is the parent of the Public Service Company, and it is evident that 14,455 people share in the ownership of Colorado's utility service.

The Other Side of the Company-Employee Picture

SO OFTEN we see only one side of the company-employee situation. The fact that the company is dependent upon its employee personnel, prospering in a degree governed by the employee attitude to the public, sometimes almost clouds the equally pertinent truth that utility employees are a favored lot.

This is not to imply that utility employees need to be reminded of their advantages, for the activities of loyal employee organizations and associations recruited from individuals in the utility field demonstrate effectually that company employees recognize their obligations and have the progress of their industry at heart.

However, it does add to our day-by-day satisfaction to take stock of our numerous blessings. Thanksgiving Day has meaning for the thoughtful worker in utility ranks. Where is another industry which holds forth such a wealth of opportunity for self-improvement to the worker? Where is another which offers educational advantages, insurance and disability protection, company consideration to personal problems and qualifications, congenial associations and employment conditions, to the degree found in the average utility family?

Gas Companies Must Push Sale *of* Refrigerators Although Perfect Machine Is Not Yet Achieved

This informal discussion by D. J. Young of Tacoma, Washington, followed the reading of J. H. Gumz' report on gas refrigeration, presented before the Commercial Section of the Pacific Coast Gas Association convention at Pasadena. As Mr. Young is closely in touch with refrigerator manufacturers his remarks are illuminating.

WE HAVE entered too much into theoretical discussion of an ideal refrigerator, rather than backing the man who is trying to make a refrigerator today, and a good one. There are four refrigerators that are immediately available here: the Soreo, Commonsense, the National, made by the Winchester people, and the Electrolux Servel.

THE AVAILABLE MACHINES

The Soreo has been on the market for a year and a half. They have a fairly good working machine. I don't think it is the best machine by any means, but it is a good workable machine. The people that have used it have gotten good satisfaction, and still the theoretical discussion of an ideal refrigerator has largely prevented the Sorco Company from selling a few and making a few dollars that they could spend on further development of the machine.

The National machine is a machine that has been on the commercial market as an electric machine for four or five years. I have had one in my house for four years. I have one of the new types up there now and it has been a workable machine for some time. They haven't been prepared to put one out for gas service. The fact is they are not fully prepared yet, although I was in the factory this Spring and saw many units that had passed the test of the factory. The thing they are waiting on is a careful study of their sales policy.

I think probably Mr. Gumz is slightly in error as to the consumption of these gas units. The figures that he uses are, I think, as originally made by the New York Consolidated Gas Company, and they were derived under ideal operating conditions. I think the consumption will be at least double.

HOW SERVEL MACHINE DEVELOPED

The gas people of the country, as I indicated, have been too skeptical about this thing and that has largely prevented its development. The Servel people have shown a great deal of nerve. They went to Sweden and bought something they didn't know anything about. They knew it looked good and it is good. It has some features about it that are ideal. It is fool-proof; no service trouble; not a moving part in it of any character whatever. There is a gas burner operating under a little coil, similar to a water percolator; it boils the water and forces it up to the top as bubbles. The element is made of steel, not exposed to corrosion, and there is no reason why it shouldn't last forever. It is a very marvelous machine. There are some technical difficulties that they have gotten into in the design for larger sizes.

It is rather interesting the way the idea developed. A prize was offered in Sweden by some society over there, to anybody that would develop an absorption refrigerator with no moving parts, and these two young Swedish cadets, taking a post graduate course, took it on as a thesis for their doctor's degree. They took a well known principle used for years, whereby a pump was used to raise water from one level to another and operated under high pressure conditions. All they did was to take the ordinary coffee percolator principle, use it in place of the pump and they had a workable unit. The reason it is not on the market sooner is because they haven't had time to study all the factors entering into the design. It is essentially a thermobalanced machine. Four things

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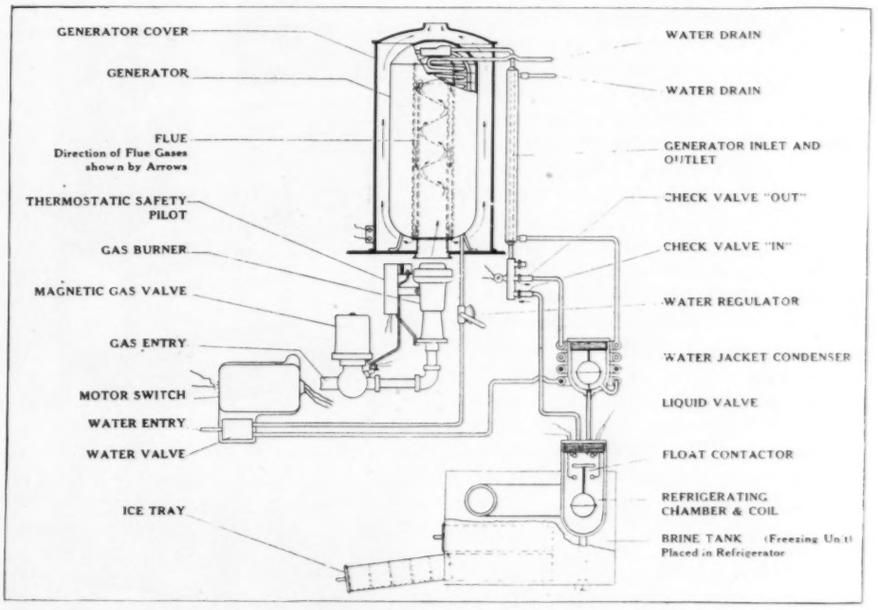


DIAGRAMMATIC DRAWING OF A GAS-OPERATED REFRIGERATOR

ICE-O-LATOR, as the above-illustrated unit is called, is made by the National Refrigerating Company of New Haven, Conn. Its operation is described by the manufacturers as follows:

The operation of ICE-O-LATOR depends on the use of a special, solid, anhydrous (dry) absorbent material with a great affinity for ammonia gas, which it will hold in storage as long as it remains cool. When the absorbent is heated, the ammonia gas is distilled out of it. This absorbent material is contained in the GENERATOR.

When the generator is heated and distillation is taking place, ammonia gas is driven out of the generator, but as it is kept confined in a small line, its pressure is raised.

The gas under pressure circulates in the CONDENSER where it is cooled with running water and liquefied. The LIQUID VALVE permits only liquid ammonia to pass into the REFRIGERATING CHAMBER AND COILS.

When the refrigerating chamber is full of liquid ammonia, the FLOAT CONTACTOR actuates the electric MOTOR SWITCH which cuts off the GAS VALVE and turns the WATER VALVE, mechanically, sending water through the generator.

As soon as the generator is cooled, the absorbent resumes its affinity for ammonia gas, removing the pressure in the system and permitting the vaporization of the liquid ammonia in the refrigerating chamber and coil.

It is this vaporization that produces refrigeration. During the change of state of the ammonia from liquid to gas, HEAT is absorbed from the surroundings and carried away by the gas. This is the principle of practically all refrigeration.

The ammonia gas returns to the generator and is taken up by the absorbent.

"Distillation" takes forty-five minutes. "Absorption" occupies from two to six hours, depending on the degree of refrigeration required.

TEMPERATURE REGULATION. During the chemical reaction of absorption, heat is generated. This heat must be removed from the generator by the water coil, or else a back pressure will be built up in the system which will soon cause the liquid ammonia in the refrigerating coils to stop vaporizing. Therefore, the speed of absorption and consequently the degree of refrigeration in the refrigerator, may be governed by regulating the supply of generator cooling water. This function is performed by the WATER REGULATOR.

Modern Kitchen Equipment
for Hotels *and* Restaurants

By H. E. KUNKEL
Cass Manufacturing Company

This summary of the gas-burning equipment needs of the up-to-date commercial kitchen was prepared by Mr. Kunkel as one of the group of lectures which WESTERN GAS has been publishing for the past several months, all of them originally given before the Gas Appliance Association of Southern California during that organization's appliance sales course.

THERE is in our public eating places a department of great importance and which is practically never seen by the patron. This is the kitchen. Many places pride themselves on the condition of the kitchen, invite inspection by guests and patrons, and consider that the sanitary and efficient arrangement is one of the best advertising features of the establishment. The kitchen is one of the most interesting and important parts of every hotel or cafe. The great hotel or prominent restaurant is known throughout the world by the food prepared within the four walls of its kitchen. It has been said that the most important thing in life is food. The preparation or cooking of foods has been advanced from the most primitive methods imaginable to that of the highly efficient, modern gas-fired range in use at the present time. High efficient engineers are employed to properly plan the layout for kitchens and do so with one thought in mind—*that of saving labor*. The comfort of employes, ease of equipment operation and the elimination of unnecessary steps are factors kept constantly in mind.

The design and equipment of the kitchen depends upon the size of the institution; no matter how small the place may be, there are ever so many labor-saving devices in use today. It is surprising to the uninitiated to see the ease with which the up-to-date kitchen is operated. The equipment engineer understands and plans accordingly.

THE KITCHEN RANGE

One of the most important fixtures for any kitchen is the Range. It must stand continual abuse and yet be in condition to give service every hour of the day or night. There must be no letting up; it is forever on the firing line doing its bit. The question of metals is of utmost importance in the construction of any range. Soft gray cast iron should be used and with no hard flinty parts, as contraction and expansion must be even to prevent breakage of the various parts. Mistakes are often made by foundries through the use of old burned castings being remelted in their cupolos; these parts retain their relationship in the new casting, causing the hard flinty places, with the consequent breakage and ruin of an otherwise good top plate of the range.

TOP: Chef's steam table and plate warmer, built to order to fit requirements of the individual kitchen. CENTER: Combination broiler with fry plate. BOTTOM: The familiar iron fry plate, indispensable to every commercial kitchen

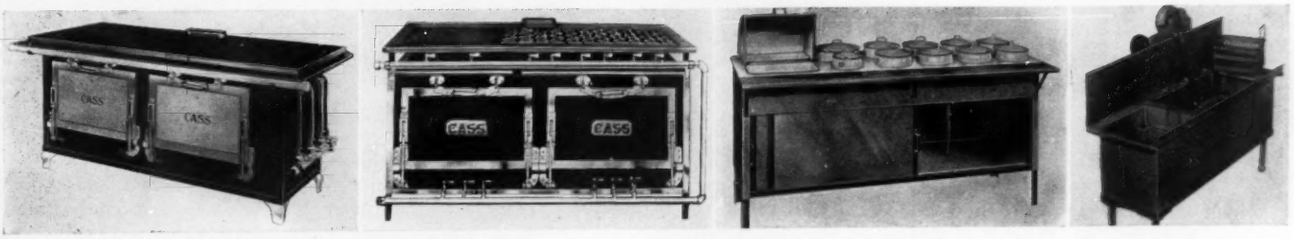
In the memory of most of us, coal was the universal fuel used in the firing of our hotel and restaurant ranges; this was followed by the many oil burning devices with all their trials and troubles. We are very fortunate here in Southern California in having a good quality of gas for fuel, ranging from 850 to 1175 B.t.u.'s per cubic foot, depending upon the location. Gas under perfect combustion is one of the best of fuels and produces less wearing effect than any other kind of fire; this condition is brought about by the constant even temperatures produced. However, when imperfect combustion is prevalent, you have a reverse condition, detrimental both to the range or fixture used and to the health of those employed around it.

Ever bear in mind that perfect combustion requires approximately 12 cubic feet of air with every cubic foot of gas burned. The primary supply of air is that amount of air mixed with the gas through what is known as an air mixer. The secondary air supply that completes combustion is the air drawn in around and over the fire by the direct action of the chimney. If a sufficient quantity of air is prevented from combining with the gases, the resulting heat loss may be as much as 70 per cent and the gases that might otherwise have been used pass off through the chimney, unconsumed and therefore wasted. In other words, 70 cents out of each dollar paid for fuel passes up the chimney when imperfect combustion is tolerated.

I wish to impress upon you the importance of careful attention to all gas-burning appliances; any apparent change in the quantity of gas used under like conditions, should have the immediate attention of an engineer, to ascertain if proper combustion is taking place, and to make the necessary corrections if it is not.

Two types of ranges are most commonly used today, namely, the *French Type Range* and the *Short Order Range*.

The solid top French Range is used by hotels serving regular meals, the same fire heating the top of the range as well as the ovens. It is economical in fuel consumption and has less fires to control. The solid top on this type of range gives one continuous smooth surface, convenient in moving large utensils, such as heavy stock pots, etc. The absence of uneven places and the range of heat, from that directly over the fires, to the extreme far end of the range, permit everything from heavy quick work to that of simmering heat. In the preparation of every meal, occasions arise for both a very hot plate and



Some typical illustrations of modern kitchen equipment. Left to right: Solid top portable "French Type" range, burning gas only. "Short order" range, with open burners and also solid top. Another example of the specially built steam table. Dishwasher, with gas burner for heating water

one of temperate heat, having at all times a battery of ovens ready for use, all from the same fire. Such ranges should be of the heavy duty type, not only to insure long life, but to maintain a steady temperature for continuous service while meals are being prepared.

SHORT ORDER RANGE

For restaurants and short order places serving meals continuously, including the heavy meals at stated hours and short orders throughout the balance of the day and night, the open top, or what is more commonly known as the *Short Order Range,* is better suited. The main body of a short order range need not be in use except as required. When the ovens are necessary for baking pastry, etc., they may be operated separately. The tops are always ready for immediate service in cooking short orders, and should be equipped with several burners, according to the volume of business it is called upon to handle during the peak load time. In addition to the open top, there should be a solid plate, well polished, for cooking steaks, hot cakes, etc., obviating the necessity of having separate hot plates for this purpose. All such construction should be very heavy and durable; the grates over open burners should be strong enough to support heavy cooking utensils and not sag; the gas burners should be of a size and type to provide for heavy service with the minimum consumption of fuel. Ovens should be lined to withstand the heat without warping and so constructed that the direct action of burning gases will not come in contact with the food being cooked.

STEAM TABLES

Steam tables, sometimes called hot tables, are designed and built for the purpose of keeping food hot for an indefinite period of time. There are no standard sizes and many types are constructed. They are built to fill the requirements for the place in which used. The inset type of table is most commonly used. The pans of these tables are made of galvanized iron, copper, or other metal, as desired. The pan is covered either with cast enamel panels, German silver, copper, monel metal or galvanized iron. The openings are so arranged that standard steam table pots and pans can be set in. Water in the table is usually heated by placing a gas burner directly under the table. The insets and pans, when in place, fill the openings, keeping the steam confined within the pan and surrounding each vessel, keeping them hot. Another type of table, similar to the one just described, except with a solid top and no insets, is used mostly in institutions where food is dished up and set directly on the hot table, waiting to be taken to the dining room. A table of this type, 15 feet long and 30 inches wide, will serve approximately 250 persons. The steam table is one of the most essential fixtures in the hotel, cafe or institution, being next to the range in importance.

BAKE OVENS

Portable gas-fired bake ovens of the type most generally used by hotels and restaurants of the Southwest are usually constructed of heavy galvanized steel, lined with two inches of mineral wool which is held in place by an inner lining of heavy sheet iron. Such construction is good, being very slow to deteriorate, is non-inflammable, and the B.t.u. loss is very low, being only 0.666 B.t.u.'s transmitted per square foot, per hour, per degree difference in temperature of air in contact with the sides or exposed surfaces. Bake ovens are usually equipped with the bar type of gas burner. Roasting of meats is quite often done through the use of bake ovens. Free air passages and ventilation are arranged to promote proper circulation of air, which insures an even temperature. The floor and walls of each deck are lined with special tile, usually one and a quarter inches thick.

PASTRY OVEN

Pastry ovens are constructed quite similar to the bake oven; instead of being lined with mineral wool, the two-inch space between the outer and inner walls is used for the circulation of the heat and the oven proper is heated by convection instead of by the direct action of the fire. These ovens are very quick to respond, maintain an even temperature, and are very satisfactory for the purpose intended. Like the bake oven these pastry ovens are equipped with the bar burner.

COFFEE URNS

Coffee urns are quickly identified by most everyone; they are usually in plain view within the restaurant or cafe and for this reason are constructed so as to be pleasing to the eye. Outer jackets are made of copper and finely nickel plated. The coffee is made and retained until used on the inside of the urn in a vitrified stone crock or jar, which is surrounded with boiling hot water. Single urns are equipped with two faucets and two glass gauges with removable screw caps for cleaning. One gauge indicates the amount of water within the jacket and the other gauge shows the coffe within the stone jar. Quite often in large installations, batteries of urns are used, having a measuring device, which regulates the quantity of water desired, at a given time, and works automatically. Gas burners under urns keep them piping hot.

BARBECUE MACHINE

The gas-fired barbecue machine has made possible the roadside barbecue establishments so familiar to all of us. The space back of the grill, which is plainly visible in the illustration, is filled with artificial fuel under which is placed the "hot blast" type of gas burners which project the fires up through the fuel. Revolving spits, which are controlled by a small motor, are suspended before the fire. The meats to be barbecued are hung on these spits, which slowly revolve before the fire.

GAS BROILERS

Gas broilers are coming into quite general use in cafes and restaurants. Gas broilers are ready for instant use at any time; gas is not lighted until wanted. Differing from the charcoal broiler, the fires are directly above the meats being cooked. Operation costs of charcoal broilers are prohibitive except in establishments having peak loads

(Continued on Page 48)

Another Phase *of* Oil Cooling

By H. J. MAXWELL
Standard Gasoline Company

LAST month a paper by E. R. Cox was published in these pages, dealing with the subject of absorbent oil cooling. Mr. Maxwell's paper, published herewith, discusses the flooded type of open coil cooling. It was read before the October 21 meeting of the California Natural Gasoline Association.

In discussion of his paper Mr. Maxwell stated that there are several cooling towers with this type of equipment operating on oil cooling service in natural gasoline plants in California. In these installations the cold oil leaving the tower ranges from two degrees to five degrees above wet bulb temperature depending upon the atmosphere and the conditions of the sprays. In every case the rate of exchange compares very favorably with that of the closed water to oil exchange as far as a heat balance is concerned. Quoting Mr. Maxwell:

"At a glance it may be said that 5760 feet of two-inch pipe and a 16x60x40 foot cooling tower with 355 g.p.m. water circulation is very inefficient to only cool 180 gallons of oil per minute. The answer is the lowest ultimate temperature of the oil at a reasonable cost is the important feature regardless of what the B.t.u. per square foot per degree difference per hour is."

THERE seems to be a difference of opinion regarding oil cooling as required in the natural gas absorption plants of today. This fact is verified by the different methods used throughout the industry. Oil to water heat exchangers used in conjunction with an atmospheric cooling tower and open cooling coils placed in the cooling tower spray seem to be the most successful methods although refrigeration is being applied with very good results.

It was the writer's opinion that the open coil placed in the cooling tower spray was the most reliable and inexpensive installation. With this in mind, an attempt was made to make improvements on this method of oil cooling—not to obtain a high rate of exchange per unit area but to obtain the lowest ultimate temperature of the oil leaving. It is of very little importance whether the rate of exchange is 80 B.t.u. or 10 B.t.u. so long as the temperature of the oil leaving the cooling system is low and the cost of the installation reasonable.

There are two distinct problems to solve. One is a properly designed cooling tower to cool the water within a few degrees of wet bulb and the other is arranging the coils so as to get all the cold water on the surface which is to be cooled.

The first question to present itself is one of much importance. Should evaporation upon the coil surface be encouraged by merely wetting the coils or should they be flooded with plenty of cold water so as to carry the heat away as sensible heat in the water? When coils are steaming, it is a good indication that the water next to the pipe and the pipe surface is fairly warm. This reduces the temperature difference between the oil and the water film and in turn reduces the amount of heat transferred per unit area.

On the other hand, if the coils are flooded with cold water, the surface of the pipe drops in temperature increasing the temperature difference and the amount of heat transferred. It follows then that the rate of heat transferred from the hot oil through the coil to the cooling water is not a function of whether the heat is dissipated as latent heat or sensible heat but is a function of the temperature difference between the warm oil and the water film on the coil surface.

From past experience it has been found that with good spray conditions and a properly designed tower it is possible to cool three pounds of water per square foot of tower area from 10 degrees above wet bulb to within two degrees of wet bulb. The design of this tower will be discussed later.

After the water has been cooled to within two degrees of wet bulb temperature all of it must be made to strike some portion of the coil thereby creating a large temperature difference between the oil and the outside water film. The arrangement which has been tried and found very satisfactory consists of 24 runs of two-inch galvanized pipe in series with a rated capacity of 50 gallons of oil per minute. The warm oil enters the tower four feet from the pit floor and passes through 12 horizontal runs in series. The oil is then passed through 12 more horizontal runs four feet above and directly over the first 12 runs. A cooling tower 16 feet wide will provide space for four sets of coils providing the pipes lie very close together.

The cooling tower is 16 feet wide, 40 feet high and 60 feet long with wide louvre construction on the sides about half way up the tower. The top half of the sides and the ends of the tower are boarded solid. Sprays are made from one-inch pipe with saw slots on the bottom side and are welded on 12-inch centers to two four-inch water headers running along the top and the entire length of the tower. This makes a total of 120 sprays for a tower 60 feet long.

Since this tower will cool three pounds of water per square foot of area, it can accommodate approximately 350 gallons per minute or approximately three gallons per minute per spray. The condition of the sprays and the pressure drop across them are very important since temperatures near wet bulb cannot be reached in this type of tower unless the water is broken up into a very fine mist.

On the ordinary installation, the amount of heat accounted for as sensible heat in the pit water is much less than the heat taken away from the oil and is mainly due to the fact that considerable evaporation has taken place upon the coil surface. In the tower mentioned above, practically all of the heat taken from the oil can be found as sensible heat in the cooling tower pit water except the small amount dissipated while the water is dropping from the coils to the pit. No doubt some evaporation takes place on the coil, but the amount of cooling from this source is so small where the coils are flooded that it can practically be forgotten. It then follows that the rate of exchange on flooded coils is not a function of the wet bulb temperature except that the wet bulb governs the temperature on the water striking the coils.

An average of several tests in the Ventura fields tends to support this reasoning as the following results will show:

Wet bulb 62°
Dry bulb 72°
Oil circulation 1260 lbs. per min.
Oil in 111°
Water circulation 355 g.p.m.
Water over coils 64°
Water in pit 73°
Oil out 65°
Cooling range 46°

Calculating the heat balance 1260x 46x.5 equals 28,980 B.t.u. per min. taken from oil, 355x8.3x9 equals 26,514 B.t.u. per min. sensible heat in water. Then there is approximately 2400 B.t.u. per min. that we assume is dissipated while the water is dropping from the coils to the pit floor and a small amount of evaporation upon the coil surface.

What Is Greatest Present Need *of the* Gas Industry?

Each month WESTERN GAS is publishing one of the three-minute speeches made on the above subject at the Pacific Coast Gas Association Convention of 1926. The following speech was delivered:

By F. U. NAYLOR

Pacific Gas and Electric Company

THE greatest need of the gas industry is a co-ordinated program of education, advertising, and sales activity that will foster the sale of quality gas appliances for modern homes.

Our gas industry has large generating plants and far-reaching distribution systems, pioneered and perfected by able engineers. We have accurate accounting systems, excellent service departments, and ambitious sales departments. Rate departments are working out equitable charges for our service for every type of consumer. Managements have built a sound economic foundation for investments that each year attract additional capital for our large expansion program. And, finally, a well-trained personnel has been developed within the industry, having as its objective a better service to the public.

Notwithstanding this complete organization of the gas industry, its purpose of rendering service to the public is often frustrated, not because of any failure on the part of the gas, but because of the appliances that utilize gas. Unknowingly, consumers have blamed the gas because of the faulty operation of some poorly designed, or improperly installed gas appliance. This situation is becoming crystallized into more or less of an unfavorable acceptance for gas and gas appliances.

Regardless of the efforts of sales departments we know that in many companies the trend of average consumption per domestic consumer is on the decrease. To be sure, competition from other fuels has become very keen, but our gas industry should be able to more than hold its own in the face of this competition because of the proven superior advantages of gas as a fuel. We know that it is only necessary to properly install a quality gas appliance, with its modern improvements, for each and every consumer to fully realize the benefits of gas service.

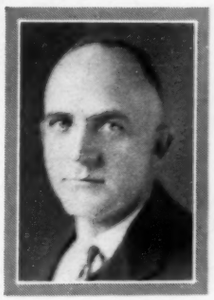
Therefore, the greatest need of our gas industry today is an educational program that would give the proper—and much-needed—support to the sales agencies which are endeavoring to sell and properly install the modern quality appliance. The extent to which this plan is put across will measure the future growth of our gas industry by building a continued popular preference for gas—the *ideal fuel*.

Warm Air Heating Problems Peculiar *to* Sunny California

By GEO. FINNEY, *Secretary-Treasurer*

Gas Furnace Association of Southern California

THE civic and improvement association together with the real estate men of California have so sold California sunshine and climate to our new arrivals and even to those of us who have lived here for many years that we seem to be of the opinion we do not need heat in our homes, offices and factories. While this is true during most of the year, both winter and summer, we do have a few cold snaps, together with a little rain, when heat is most desirable and very necessary.



Geo. Finney

The problem of heating in California is thus different from that in other sections of our country, where the heating equipment is fired up in the fall and kept going until spring, day and night. Here we demand great volume of heat instantly in the morning and evenings, allowing the fires to go out in the middle of the day. In addition to that we do not have the type of construction in California that is found in cold climates, because it is not necessary. Very seldom do we see insulated houses equipped with weather strips and the other accessories deemed so necessary east of the Rocky Mountains.

For these reasons the gas furnace manufacturer must use every particle of initiative and salesmanship at his command to overcome the belief on the part of the consumer that he does not need an adequate heating system. In addition, the construction of heating equipment must necessarily differ from that used in other climates, owing to the difference in demand on the appliance. Many serious accidents have been occasioned by the use of inadequate equipment, due to the overloading of the appliance which has reflected seriously on the gas industry.

The uninformed salesman is the most serious menace in the industry, with his talk of economy of operation, thereby instilling in the mind of the prospect the idea that an appliance can be operated on air alone. It is no trick to construct an appliance to burn a minimum amount of gas, but there is quite a trick in constructing an appliance to burn the maximum amount efficiently and safely. If heat is desired, B.t.u.s must be consumed to get it.

In the past, the success of the appliance industry must be laid not to the manufacturer, but to our utility companies, with their perfect service, their cooperation and the exceedingly cheap price of the gas itself. Until now, anything that looked like a gas burner would operate and be purchased because economy of operation has not been a factor. With the rapidly deminishing supply of natural gas and the resultant increase in price per B.t.u., manufacturers will do well to look to the scientific engineering efficiency of their product against the time when efficiency will be a factor.

CALIFORNIA GASOLINE MOVES TO LONG BEACH

California Gasoline Company headquarters are to be moved to Atlantic Avenue, Long Beach, Calif., on the outskirts of the producing area.

RADIATOR MANUFACTURER NOW HAS NEW FIRM NAME

Pacific Gas Radiator Company's name has been changed to Pacific Gas Heating Company, according to announcement of A. J. Hartfield, president of the organization. The company, established in 1913, makes a complete line of gas heating appliances. Headquarters are at 1732-40 West Washington Blvd., Los Angeles, Calif.

NEEDLES COMPANY WANTS OIL BASIS FOR RATE SCALE

Needles Gas and Electric Company, operating in the city of Needles, San Bernardino County, Calif., has applied to the State Railroad Commission for permission to establish a reduced schedule of rates, and thereafter to be placed on an automatic adjustment basis contingent upon the increase or decrease in the price of fuel oil. This plan of automatic adjustment of gas rates was established by the commission a number of years ago, and applies to all the major utilities serving artificial gas.

STANDARD GASOLINE COMPANY MOVES TO S. O. BUILDING

On Monday, November 1, the Standard Gasoline Company opened business in its new offices on the sixth floor of the Standard Oil Building, 605 West 10th Street, Los Angeles. Earle Derby, manager of the company, will also maintain an office in the Standard Oil Building at San Francisco, located at 225 Bush Street, where the auditing department of Standard Gasoline Company is already established, following the purchase of the Pacific Gasoline Company by the Standard Oil Company. The Standard Gasoline Company is operating as a separate organization.

CORROSION SUBJECT OF NEW PUBLICATION

Frank N. Speller is the author of a book entitled "Corrosion Causes and Prevention."

AMERICAN WELDERS TO MEET IN ANNUAL CONVENTION

From November 16 to 19 will be held the annual meeting of the American Welding Society, at Buffalo. An unique exposition will be held in conjunction with the meeting, the International Welding and Cutting Exposition, demonstrating practical applications of welding.

SUBURBAN EXTENSIONS UNDER WAY IN PORTLAND

The Portland Gas and Coke Company has plans under way for extensions into a number of new suburban districts during the next two months. The amount of work in prospect will be sufficient to keep the entire summer construction force working until the first of the year, according to E. L. Hall, general superintendent of the company.

STANDARD FURNACE ORDINANCE PUBLISHED BY OMAHA ASSN.

An organization of gas furnace men, by the name of Western Warm Air Furnace and Supply Association, with headquarters at 3624 Lafayette Ave., Omaha, Nebraska, has published a standard furnace ordinance which it recommends for adoption by any city, town or incorporated village. Copies may be had by addressing John H. Hussie, secretary of the association.

St. Mary's Bridge, over Santa Cruz River, Tucson, Ariz., as it looked on September 28, 1926

Arizona Gas Line Withstands Enormous Strain

ON September 28 the Santa Cruz River, which is in the territory of the Tucson Gas Electric Light & Power Company, and which is ordinarily a dry stream, achieved a depth of 15 feet, due to heavy rainfall. C. H. Webber, superintendent of the Tucson utility's gas department, reports that as the river receded it started a scouring motion which took away a 40-foot section of a bridge on which was suspended a three-inch high pressure welded gas main. When the section gave way, the entire weight was thrown against the gas line, causing several kinks. One hundred feet on either side of the bridge the company has expansion joints, and the strain on the pipe was great enough to pull out one of these joints for a distance of two feet—the only point in the line where a rupture occurred.

"Considering the enormous amount of friction caused by the tamped earth in the 100 feet between point of rupture and the bridge, it is almost unbelievable," writes Mr. Webber, "that a pipeline could stand the strain without breaking the seams."

Repairs were made by cutting off 50 feet of the bent pipe, welding in a new section, and welding a two-foot section on at the expansion joint.

Gas Holders Levelled While *in* Operation

By H. N. WARDALE

Portland Gas & Coke Company

TWO jobs requiring both ingenuity and skill have been completed by the Portland Gas & Coke Company on two of the utility's gas holders.

Since all of the gas manufactured passes through these holders and as they are relatively small in capacity (approximately 500,000 cubic feet each) the lifts are almost constantly going up and down and thus have have much more severe service than any of our main storage holders. Owing to the uneven settlement of the soil it was found that both of the holders were considerably out of plumb and this caused binding of the guide rollers and produced strains in the lifts.

Two years ago the company's relief holder tank was leveled by driving steel wedges under the bottom and then placing concrete between the wedges. The columns and guide framing were all adjusted and stiffened so that they were plumb. Although this improved the operation of the holder very materially it was still found unsafe to uncup the lifts owing to the accumulation of tar in the bottom of the holder tank and the steel beams, known as "landing blocks," on which the lifter rests when uncupped being too short to properly support the lifts.

After the removal of the tar it was decided to install new landing blocks and a block of special design was used so that it would set on the bottom of the tank without interfering with the rivet heads or the angle which forms the joint between the bottom and side sheets of the tank.

The blocks consist of two steel plates about six inches wide and three feet long fastened about six inches apart with long rivets. The method of installing them at the bottom of the tank under 36 feet of water was to lower them on a steel pipe with a hook on the bottom. A rope was also hooked to one of the rivets on the lower end of the landing block. After the block was lowered in a vertical position a pull on the rope turned it to a horizontal position.

The rope and rod were then unhooked and the next landing block placed. In all a total of 50 landing blocks were installed. The holder now works smoothly and all fear of trouble has been removed.

Holder No. 1 was leveled up in the same manner as the relief holder. Cement grout was afterwards applied by means of a cement gun.

The work described was all done without interfering with the operation of the holders, except for short intervals while the landing blocks were being installed on the relief holder.

HIGH PRESSURE GAS STORAGE SYSTEM FOR SO. COUNTIES

ON the front cover of this month's issue of *Western Gas* are shown two of the high pressure gas holders which have been erected for the Southern Counties Gas Company by the Western Pipe & Steel Company. In all there are 12 of these holders on the company's system, six of them of 250,000 cu. ft. capacity, three of 100,000 cu. ft. capacity, and three of 76,000 cu. ft. capacity.

The holders illustrated on this month's cover are of the 100,000 cu. ft. size. They measure 20 feet one and a half inches in diameter, by 139 feet six and a half inches in length. The shell consists of 15 cylindrical rings of three plates each.

As described in the December, 1925, issue of *Western Gas,* Southern Counties Gas Company began its experimentation with high pressure storage a little more than five years ago, when it erected a 100,000 cu. ft. holder, of different design than those now used on the company's system, at Azusa, Calif. Under the guiding hands of A. F. Bridge, and M. R. Thompson, engineers for the utility, the high pressure principle has been applied widely throughout the company's distribution system. Experience to date indicates that operating costs will show a decline and character of service will be improved through use of the new units.

SMOOTHTOP RANGES FEATURED IN PORTLAND CAMPAIGN

The sales department of the Portland Gas & Coke Company recently closed a successful campaign of two weeks duration, featuring Smoothtop ranges. Some 250 were sold. One novel departure was the premiums selected as inducements to buy—32-piece Holland breakfast sets. Window displays playing up these premiums, with a background of Holland windmills, proved very effective.

I. B. FUNK JOINS NEWTON PROCESS MANUFACTURING COMPANY

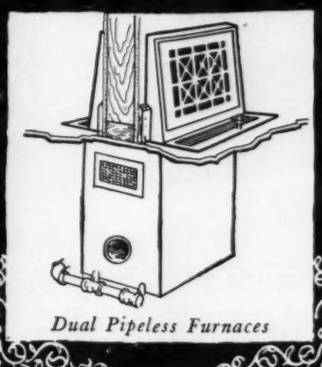
I. B. Funk, Los Angeles, consulting engineer, has associated himself with the Newton Process Manufacturing Company of Fullerton, California. Mr. Funk has had a wide range of experience in the oil industry, especially in the design and operation of natural gasoline plants. During the last five years practically all of his time has been devoted to research work on natural gas absorption and refinery distillation and fractionation. He has to his credit a number of improvements in processes and apparatus. Mr. Funk has perfected a new fractionation still to be known as the Funk Combined Still, Fractionator, and Condenser.

PORTABLE GASOLINE PLANTS SOLD TO RICHFIELD

Ryan and Hackett Company, of 1224 Pacific Mutual Building, Los Angeles, have recently sold two of the portable absorption gasoline plants which they manufacture, to the Richfield Oil Company for treating the gas from the Marland Oil Company well at Seal Beach, Calif. These two units with a rated capacity of 400 gallons of gasoline a day are producing in excess of that figure. Each of these plants is 12 feet long and five feed wide and weighs 6000 pounds. The plans are automatic in their operation and require the attention of one man for about one hour each day. Other recent installations of these portable plants are at the Coalinga Empire Oil Company at Coalinga and Hugh B. Evans, Inc., at Taft.

SPECIAL OFFER

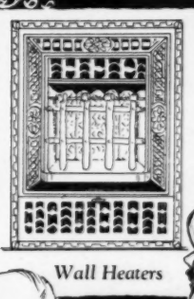
Gas-Steam Radiators


Dual Pipeless Furnaces

Unit Basement Furnace Systems

Pipeless Floor Furnaces

Gas Radiators—Pressed Metal and Cast Iron


Wall Heaters

Give Your Customers a Complete Line to Choose From

You need never lose a sale if you have the Pacific line on your floor! No matter what type of gas heating your customer requires—you can satisfy him perfectly with some Pacific appliance, or a combination of several appliances.

—and you have so many selling features on each appliance that it's easy to make a convincing sales talk and demonstrate the superior quality and efficiency of each appliance.

If you want more profits and more business—Pacific has a money-making proposition to make to you. Will you write for it—**now.**

The name is changed to remind you that Pacific makes all types of gas heating appliances.

Pacific Gas ~~Radiator~~ Heating Company

Gas Heating **Headquarters**

Largest in the West. Representatives in Principal Western Cities.
General Offices & Exhibit at 1732-40 West Washington St., Los Angeles
Telephone BEacon 2190

Manufacturers of Every Type of Gas Heating Appliance

Left: Gas Co. Merchandising Booth
Right: Gas Engine Exhibit

Developing Prospects *by* Exhibiting *at* County Fairs

THE Southern Counties Gas Company has been very active in participating in Southern California fair exhibits during the past two months. The fall season is the time during which many fairs are being staged throughout the company's territory and the attendance at some of these exhibits runs into six figures.

From a merchandising standpoint the Southern Counties Gas Company believes it is wise merchandising to display gas appliance booths and exhibits at these fairs. The utility has therefore maintained attractive booths and exhibits at a number of fairs during the past several months, the principal ones of which were the Ventura County Fair at Ventura, the Orange County Fair, and the Los Angeles County Fair held at Pomona.

At Ventura Charles H. Smith, Ventura County sales representatives for the company, designed and laid out a very attractive gas appliance booth. Mr. Smith placed on exhibition in this exhibit several models of Roper Gas Ranges, varying types of the Humphrey Radiantfire Gas Heaters and a Beacon Gas Heater. The booth was neatly arranged with a background of colored cloth which helped to display the appliances more effectively. Several of the appliances were connected for demonstration to the hundreds of visitors who passed during the course of the fair.

A GAS ENGINE DISPLAY

Another attractive booth maintained was at the Los Angeles County Fair at Pomona where the Southern Counties Gas Company in conjunction with the Western Machinery Company, maintained a splendid gas engine exhibit. The Western Machinery Company installed a 60 horse-power Western gas engine which proved of interest to thousands of agriculturists and growers who passed through the industrial tent. The Southern Counties Gas Company installed a very neat "set-up" which consisted of regulators, dust-traps, a glass-encased meter and a miniature gasometer. The pressure on the gas was cut down and from the gasometer passed to the 60 horse-power unit which operated during the week of the fair.

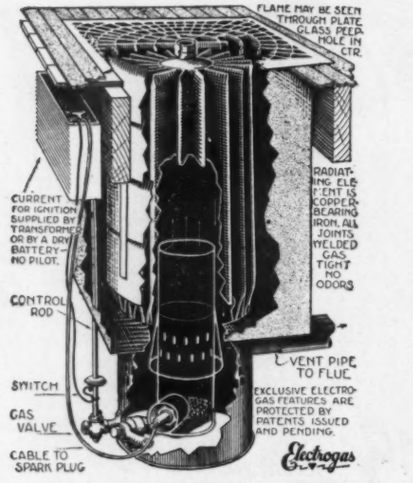
The entire booth was cemented and the Western unit was installed on a concrete foundation. Charles L. Ferry, power engineer for Southern Counties Gas Company, was responsible for the gas company's booth and had charge of the utility's exhibit. Many visitors who used natural gas for pumping stopped to examine the gas engine in operation.

GAS APPLIANCE EXHIBIT

In addition to the company's machinery exhibit in the main industrial tent there was also maintained an attractive gas appliance exhibit in the commercial tent. In this latter booth were exhibited gas ranges, Humphry Radiantfire Heaters and other gas burning appliances.

At the Orange County Fair the company maintained a gas appliance booth in which Miss Willson, director of the company's Orange County Home Service Department, officiated. Miss Willson talked to many gas range prospects during the week of the fair and to many users of gas ranges. She explained the features of the oven control and other labor-saving devices now considered standard equipment on a modern gas range.

"We consider the contacts formed at these appliance booths at the fairs very valuable," says Clyde H. Potter, advertising and publicity man for the Southern Counties Gas Company. "During the past several years we have participated quite actively in these fairs and have learned that this method is an excellent one for finding new appliance prospects as well as building good will for our company. Our sales organization develops a sufficient number of appliance prospects to pay for the expense of maintaining the booth and sales are made long after the fair is over."


FLAME MAY BE SEEN THROUGH PLATE GLASS PEEP HOLE IN CTR.
RADIATING ELEMENT IS COPPER-BEARING IRON, ALL JOINTS WELDED GAS TIGHT NO ODORS
CURRENT FOR IGNITION SUPPLIED BY TRANSFORMER OR BY A DRY BATTERY—NO PILOT.
CONTROL ROD
VENT PIPE TO FLUE
SWITCH
GAS VALVE
EXCLUSIVE ELECTRO-GAS FEATURES ARE PROTECTED BY PATENTS ISSUED AND PENDING.
CABLE TO SPARK PLUG
Electrogas

—a good floor furnace
—three sizes

ELECTROGAS FURNACE CO.
Rialto Bldg. San Francisco

Gas Companies Must Push Sale *of* Refrigerators

(Continued from Page 29)

are going on at the same time. Heat is being applied at one place and dissipated at another; absorbed at another and dissipated at another. Four things are going on at the same time and unless in complete balance, the machine fails to function effectively, and if badly out of balance it fails to function at all. Until the factors governing the absorption and radiation of heat at those points are fully determined, they are having some difficulty, not at all insurmountable, but it is likely that they will have the thing well organized by the first of the year.

ELECTRICITY IS AFTER THE LOAD

One point about it—don't forget that all these machines are heat-applied machines. It is done with heat. Electricity, as we all know, will produce heat and gas will produce heat and these machines will all likely come out as an electric or a gas machine. The National people until a year and a half ago never considered a gas machine; never thought of it. They were developing it as an entirely electric machine. . . .

The Servel people have recognized the advantage of gas and they told me that in the beginning they were not going to make an electric machine but were going to confine themselves to gas. I don't know whether that is correct.

The electric people have gone after them strong and are putting all pressure to develop electric first, and if first, they have got that much start on it. That is something that is not to be overlooked in this matter.

As far as the balancing of the heating load, of course, as demonstrated—that is out of the question. It does some good, but it is out of the question to balance the whole heating load with refrigeration.

INSTITUTIONAL ADVERTISING

Another thing about gas refrigeration, if we can get it, is the institutional advertising that we can get from gas refrigeration. People have long since believed that you could do anything with electricity. There is the radio and all that sort of thing and when you say it is done by electricity, it is no longer a mystery.

If you will tell them that you can produce refrigeration by burning gas, you gain attention. If we can prove our case and sell them, we have done a good deal of institutional advertising. It gets us before the public in a very commendable way.

I have been working on refrigeration nearly my whole time for the last year and a half, and I am quite close to all of the companies. I have assisted both the National and the Servel in some respects . . . I think that both of these machines will be on

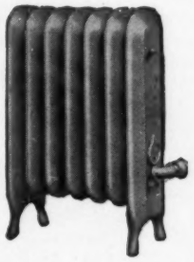
POTTER Heating

For many years POTTER Engineers have pioneered the way in the advancement of modern Gas Heating Systems. They have developed Gas Heating to such a degree of perfection that today, POTTER Products have become a standard of comparison wherever dependable, safe, economical and healthful gas heating is discussed.

OUR BEST ASSET

The tens of thousands of satisfied customers that our Organization has made through POTTER Gas Heating installations, is a JUST tribute to a satisfactory product—a gratification to conscientious effort.

THERE ARE MANY REASONS WHY IT IS BETTER TO INSTALL POTTER SYSTEMS

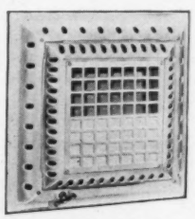


"POTTER" Vented Radiators

Only POTTER has these 7 POTTER Features

(Cast Iron and Steel-Made)

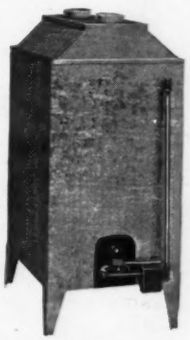
1. Condensation abolished. This does away with corrosion. Many years are added to the life of the Radiator.
2. Triple Circulation. The heat goes into the room, not up the flue.
3. Uniform warmth distribution. The air is never "cooked."
4. Quick heat. No other radiator heats so quickly as the light, efficient POTTER Steel-Made.
5. Aristocratic appearance. The POTTER Cast Iron Radiator is selected for the finest and largest homes.
6. Totally odorless always.
7. Not expensive.



"COLE" Floor and Wall Heaters

Made in heavy solid cast aluminum.

COLE is the only furnace manufactured that can be installed on either the first or second floor.



"MAGIC WAY" FURNACES

"MAGIC WAY" was the first, and has always been considered the leading Unit System of heating.

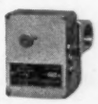
The principle of Unit Heating of modern buildings, brought to its present state of refinement through the study and efforts of this Organization, is based on the principle of an individual furnace or heater for each room or group of rooms to be heated.

This type of installation allows accurate temperature control in each room, regardless of the demand in other sections of the home.

POTTER quantity production now makes "MAGIC WAY" with electric controls, available to anyone who desires a gas furnace system.

The same features that make these well known POTTER-made appliances favorites with home builders and home owners, make them popular with churches, schools, theatres, auditoriums and factories.

The low cost of adequate heating by means of "MAGIC WAY" Vented Furnaces of either the Unit or Central Plant type, will be a revelation.



"MAGIC WAY" VALVES

By merely pressing a button, the temperature of any room may be regulated. This valve not only turns the heat on but it regulates the heat to suit your exact wants.

"MAGIC WAY" Floor Furnace

When the furnace type of heat is desired at low cost or when a basement is not available, use "Magic Way" Vented Floor Furnaces.

Potter Heating Includes:

"MAGIC WAY" UNIT FURNACES
"POTTER" GAS RADIATORS
"STEEL-MADE" GAS RADIATORS
"COLE" FLOOR AND WALL FURNACES

There Is a **POTTER System** for Every Need

POTTER RADIATOR CORPORATION

San Francisco—Oakland—Los Angeles—San Diego

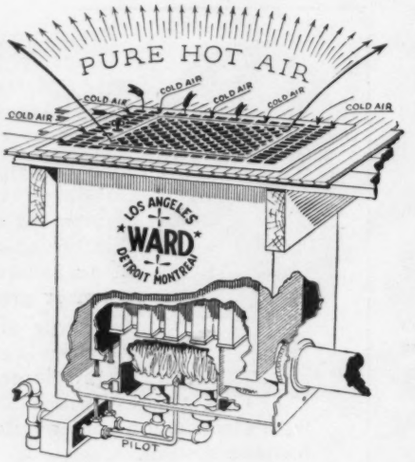
the market this Spring. Right now, discussing the relative merits of the two, the Servel machine, as at present developed, is essentially a machine that will be built with a box. They won't be able to build a unit that you can place on an old box, or a box owned by the customer, for some time, as a matter of policy, whether as a matter of technique or not. The other machine for the present will be built without a box and may be placed on any box or anywhere within 50 feet, and both of them are immediately useful—one of them to sell with box, if you please, and the other to sell the other way. I want to urge that when these things come to you, don't waste too much time worrying about which one is the best. Take them both, or any one of the three or four that may come to you. Try them out; spend a little money on them to assist those companies. They have done a marvelous amount of work in developing these things and as I say, that Servel Company showed marvelous nerve in going to Europe and buying a machine that they knew very little about. They saw possibilities, and they are doing good work for the gas game. I understand they are going to handle it entirely separately from the electric compression machines.

About four or five years ago, before Steinmetz died, at a meeting at Del Monte, discussing the compression type of electric refrigeration, he is reported to have said, "Gentlemen, you are all wrong. The ultimate domestic refrigerator is the absorption type refrigerator and probably heated by gas," and that is very encouraging; but we

(Continued on Page 56)

OUR AGENCY PROPOSITION

is a big Money Maker



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General Sales Office

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The Beacon Automatic Storage Water Heater

Has a Brass Heating Element With Six Times the Heat Conductivity of Iron

The Beacon is a heavy duty appliance—high grade materials throughout. The boiler is made of heavy gauge galvanized iron and all seams are both riveted and welded.

In addition to the heart of BRASS the Beacon has a rust-proof BRASS circulating pipe which keeps the water clean.

Beacon Water Heater Co.

776 So. San Pedro St. **Los Angeles, California**

Pipe Laying *in* Advance *of* Paving

(Continued from Page 25)

PRESENT RECORD ON VACANT PROPERTY SERVICES:

It is, at present, the practice of some gas companies to install services to vacant property prior to street improvement program. From three cities the record on such services is available.

San Diego: A stub service is laid to all vacant lots ahead of street paving. A complete record has been compiled since the year 1908, and indicates the following:

Total stubs installed 1908 to Mch. 1, '26	Unused as of Mrch. 1, 1926	Utilized	Percent Utilized	Total Services
6113	4894	1219	19.9	48,378

Pasadena: Stub services have been installed prior to street paving on solicitation by property owner upon advancing cost of same. Record is available since 1914.

Total stubs installed 1914 to Mch. 1, '26	Unused as of Mch. 1, 1926	Utilized	Percent Utilized	Total Services
2999	2045	954	32%	44,672

Los Angeles: The Los Angeles Gas and Electric Corp., has followed the practice of installing vacant property services upon order and payment of same by property owner. Record has been compiled since the year 1904:

Total stubs installed 1904 to Apr. 1, '26	Unused as of Apr. 1, 1926	Utilized	Percent Utilized	Total Services
2999	2045	954	32	44,672

From the figures quoted it is apparent that considerable number of service stubs remain unused. It is natural to expect the record to show better in the case of Los Angeles and Pasadena as compared with San Diego, as in these cities such services as are installed are on order of property owner and paid for, and it is to be assumed that there is some expectation of improving the property.

The record at San Diego is deserving of attention as it indicates the condition that exists where it is the custom to install stub services to all vacant lots prior to paving. At San Diego it has been found that many stub services, idle for a period of years, have corroded to the point where it was necessary to open the street at the gas main and disconnect the service stub. Another discouraging feature in connection with the record in San Diego, of the 2566 services installed prior to 1916, only 691 have been utilized. This indicates that 1875 have remained unproductive for over 10 years.

During the period of the San Diego Service record, the paving program was not active; for that reason the figures cannot be applied to present conditions where street improvement work is carried on so intensely. No attempt, therefore, is to be made to apply the information to the local situation. The dates are presented because of their bearing on the subject.

From the records of the Southern California Gas Company a number of interesting cases can be cited which serve to illus-

Standards

Unvarying excellence, a rule from which its makers never depart, is responsible for the esteem with which the Humphrey Radiantfire is regarded. It pays to uphold standards--the higher the standards, the more it pays to uphold them.

C. B. Babcock
Pacific Coast Manager
135 Bluxome Street
San Francisco

The HUMPHREY
Radiantfire
REGISTERED TRADE MARK

Manufactured by
General Gas Light
Company,
Kalamazoo, Mich.

The One Sure Way To Stop Joint Leaks

Makes joints 100% tight — absolutely leakproof where all other methods fail.

Throughout the gas industry this non-corrosive, greaseless compound is being used to end all trouble from leaky joints.

Due to its scientific preparation and graphite base, this paste is **oil, acid and gasoline proof.** It is soluble only in water. Of paste-like consistency, it is **easily spread** on pipe joints, fittings, flanges, flange unions, and every place where a leakproof joint is desired. **It expands under heat, filling every crack and crevice—then carbonizes.**

It renders joints not only leakproof, but easy to take apart if desired.

Key Graphite Paste will guarantee you a genuine service in every Department, from the Garage to the Power Plant.

Put up in any size container, from a one-pound can to a five hundred pound drum.

E. A. Key Company, Inc.
1301 Santa Fe Avenue
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KEY Graphite Paste

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High Grade Machinery

The Babcock & Wilcox water tube boilers
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Cochrane feed water softeners (hot and cold processes)
Cochrane feed water metering heaters
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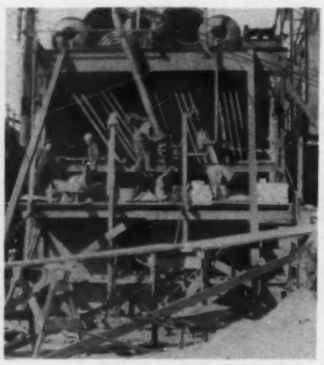

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Fire Brick Contractors Specializing in

Gas generator, boiler, still and furnace brick, industrial furnaces, retorts, kilns, brick smokestacks.

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468 Stewart Bldg.

trate what occurs when service pipe is installed to idle property ahead of paving.

Two streets may be taken as typical examples:

(1) Plymouth Blvd., between Temple and First street:

Service installed to curb.....34
Services utilized to date..... 5

The remaining 29 service locations were not satisfactory for building erected on premises and new services were installed.

These 29 services when abandoned were cut at main to avoid loss of gas from leaks that had developed on some of the services.

All of the above services were paid for and location selected by sub-divider.

(2) Under the same circumstances, idle property services were installed on Rossmore Avenue, between Beverly Blvd. and 5th Street.

Services installed to curb.....18
Services utilized 0
New services installed to provide for home erected 19

Note: The one extra service was laid as one lot was later sub-divided and two houses erected.

Similar conditions can be found over the entire territory, particularly in new subdivisions. The record in this respect is so bad that the utilities endeavor to discourage the laying of property line service on new tracts where building plans are not available.

CAPITAL BURDEN

A. Investment when installed prior to paving: At best, this can be but an estimate, as it is impossible to fix accurately the number of services that will be installed. The very extensive paving program now in progress would require an excessive number of idle property services. Based on a simple calculation it may be possible to arrive at a figure that will give some idea of the cost involved.

For instance, in every mile of gas main there is approximately 4800 feet directly facing building property; the balance is for street crossings. Over the system of the Los Angeles Gas and Electric Company the average mile of pipe has 120 consumers. This allows for 40 feet of pipe per consumer, but as there is property on both sides of the main it represents 80 feet front per consumer. The average lot in Los Angeles may be considered as 60 ft. wide. On this basis there would be one-third more services actually laid per mile of pipe, or 40 services supplying idle property.

The paving program under present conditions represents about 10 miles of street work per month. At 40 idle services per mile it will require 400 idle service installations per month. The average stub service length is 30 ft., costing about .50c per foot, or $15.00. The monthly cost will represent $6,000, and of this possibly 20% will become active, leaving a net of about $4800, a burden on the business.

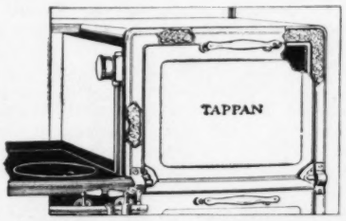
If the street program continues as at present the annual additional investment in these idle services will represent $57,600. The cost of this idle money at 12% for interest and depreciation means an annual charge of $6,912.00. As these are all idle services this burden must be spread over the active accounts.

B. Cost, if services are installed after paving: Accepting the situation at San Diego as typical of a condition that will exist, i.e., that 20% of the vacant lots require services following the street improvement.

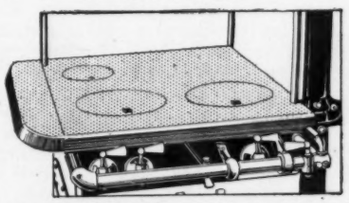
This applied to the situation in Los Angeles, as set forth under "Costs ahead of paving" indicates that but 80 services per month, or 960 service extensions will be made

Definite Superiorities

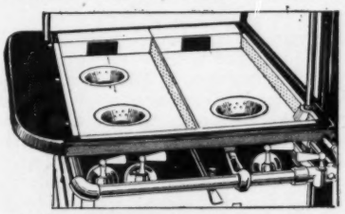
The TAPPAN range agency is prized by dealers throughout the country because the TAPPAN has definite superiorities which put the range in a class of its own.



The TAPPAN oven is insulated with 25 lbs. of mineral wool, yet it is completely ventilated. The heat is kept in the oven; your kitchen is always comfortable, and half the gas is saved.



The TAPPAN solid top is made of oil-tempered, satin-finished cast iron. It will not stain or discolor, and is easy to keep clean.



The bowl burners under the TAPPAN solid top are scientifically designed for most efficient, labor-saving cooking. The combustion chamber greatly increases the heat-efficiency of the fuel. It saves gas.

These superiorities include: the TAPPAN'S famous Insulated Oven, which keeps the heat out of the kitchen and in the oven, and (by actual meter test) saves half the gas; the TAPPAN solid top, made of oil-tempered, satin-finished cast iron, which will not discolor and is easy to keep clean; the TAPPAN bowl burners and combustion chamber, scientifically designed for highest cooking efficiency and fuel conservation; and the TAPPAN'S rounded corners, its oven heat-regulator, and other advantages which women not only prefer, but **demand.** TAPPAN has them all.

Perhaps a TAPPAN agency is open in your community. Write now for information.

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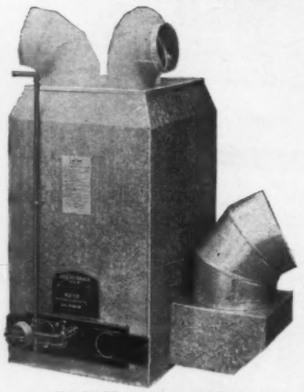
HOUSE HEATING AND YOUR LOAD FACTOR

A Short Talk to Gas Company Executives—

WHEN it comes to the effect of house heating on your line load, consider the equalizing effect of the PAYNE UNIT SYSTEM OF HEATING.



A PAYNE GAS FURNACE
UNIT TYPE
More than 30,000now working for gas companies.

Not often are all the units in a house burning at the same time. This helps to level the peaks much more than where there is but one large furnace. Add to this the installation of a thermostat on the unit which heats the living portion of the house, and you have a load factor which is very attractive.

Because your interest and ours are so closely allied, we are eager to co-operate with you in the solution of problems of new business for you on a better and more attractive basis.

Ask for our plan.

Minneapolis Thermostat

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The Wood Automatic Storage Gas Water Heater

The Standard Combination Storage Gas Water Heater

Electric Weld Range Boilers and Storage Tanks

Made and Guaranteed by

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2437 ENTERPRISE STREET **LOS ANGELES, CALIF.**

per year from gas mains under paving. The additional cost to install is due to cutting and replacing concrete. However, it is not necessary to open across the entire street in order to install the service; tunneling can be resorted to, and two holes only opened in the paving. At the present rate for cutting and repaving, plus the cost of installation of the service, it is fair to estimate the 30 ft. average service length will cost $21.00. Then 960 services at $21.00 will mean a capital charge of $20,160. This, however, is for plant account and an investment that is active, producing revenue to carry the fixed charges.

This would indicate that, from an investment standpoint, it requires 65% less capital to install service pipe upon demand for service, rather than provide stubs ahead of paving in anticipation of demand. There are also the fixed charges to be added to the plan of laying ahead of paving. Considering these facts from a financial viewpoint it is easy to decide the proper procedure to follow.

ALTERNATIVE SUGGESTIONS

To overcome the objection to cutting paved streets to install services, the suggestion has been advanced to lay gas mains in sidewalk parkways. Where gas mains now lay in a street which is to undergo improvement it will not be practicable to consider this suggestion. If the main is adequate and does not require replacement the gas company could not afford to move the location and lose, or write off, the original cost of laying. Unless the main is to be abandoned in places, or a new main laid in the street, it is not at all practicable to consider the plan.

The sidewalk parkway has its advantages, chief of which is the short service required to serve the consumer. Against this is the fact that it requires a double system of gas mains, one on each of the street. Neither of these mains need be as large, however, as one main in the street, but then the pipe cost on smaller sizes is not the greatest cost of installation. Two mains will mean two ditches, and double the joint making, which will about equal twice the cost of a single main. The saving in service pipe is off-set by the additional gas main pipe required.

There are many cases where parkway mains are preferable, and are installed, so long as accommoations exist in a sidewalk. No encouragement is offered to utilities to lay in parkways, so the practice has not become common. The fact is, parkways have been given over to obstructions that tend to eleminate this location from consideration. Some resistance to parkway occupancy is offered by abutting property owners, who maintain that their rights extend over the space occupied by the sidewalk. This is not a fact; nevertheless the utility is required to make peace with the property owner before the space can be occupied.

Mains laid at the rear of lots in easements or alleys will overcome the necessity of opening streets for service installations. Such practice is hardly to be considered, in as much as few blocks possess alleys. The idea of laying gas mains in easements, should not be considered, as on residential lots the easement would prove a dangerous location. In business districts the gas main may be located in the alley to advantage as the meters are located best at the rear of stores. Thus the gas service is short. In residential sections the situation is rather the reverse. The houses are set forward on the lot, meter locations are at the front of the house, therefore a rear

Organizing To Guarantee Furnace Performance

COMPOSED of Furnace Manufacturers and House Heating Engineers selected for their ability, integrity and understanding of House Heating Problems, the Gas Furnace Association can now positively guarantee that any Furnace installation made by any of its members will give perfect satisfaction. It will heat your consumer's home from 30 to 70 degrees without overloading because every installation will be properly designed and installed.

The Gas Furnace is the most satisfactory house heating unit that a utility can have on its lines. This organization is anxious to work with the Gas Utilities in raising the standards so that there will be no reflection upon GAS as the ideal house heating fuel.

The Association maintains its own inspector who examines every installation. If the installation has been made in accordance with the standard code the inspector so certifies to the owner, and places the seal of the Association on the furnaces.

The Gas Furnace Association of Southern California

GEORGE FINNEY, Secretary-Treasurer

8th Floor Los Angeles Gas & Electric Corporation Building

Write for copy of Standard Code for Gas Furnace Installation. It contains valuable information for gas company executives and employes, architects and contractors.

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THIS organization is the largest and oldest maker of Fire Brick west of St. Louis and offers a complete Fire Brick service to the Gas Industry. Standard sizes for—

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are always carried in stock. Deliveries can be made quickly. If you require special sizes of Fire Brick, our plant is especially equipped to make them. Write or phone us for complete information.

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Gas Regulators & Governors

For Thirty Four Years
THE STANDARD EQUIPMENT
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We have never Manufactured anything but Gas Regulators and Governors

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Main Office and Factory *Anderson, Indiana*

Established 1892

gas main will mean an unusually long gas service pipe.

RECOMMENDATIONS

From the limited data available it appears that the number of service extensions made after street improvement will be very few. These installations are extended over a number of years and, therefore, should not be considered as objectionable.

The public utilities desire to avoid opening streets following paving and endeavor to anticipate development along such streets in order to be ready to serve.

Service pipe laid ahead of paving to idle lots will require an unnecessary expenditure of capital, fully 80 per cent of which will never be utilized.

It is, therefore, the opinion of the committee that no definite action should be taken with regard to advocating the practice of installing service to all property prior to street paving.

There may be cases where such action will be advisable, but as a general rule the practice will be unfair, a burden upon the consumers of gas who pay the rates, as well as upon the utilities.

It is better to consider each street improvement plan as a separate case and make a decision on the procedure to follow after consideration of the facts involved.

L. S. Ready Resigns *from* Railroad Commission

LESTER S. READY, chief engineer of the California Railroad Commission for the last three and a half years, has submitted his resignation to the commission, effective December 15, 1926, in order to accept the presidency of Key System Transit Company, which has been tendered him by that company. He succeeds C. O. G. Miller as president.

Lester S. Ready

Mr. Ready has an extensive reputation as an engineer. He has been in the employ of the Railroad Commission 13 years, having served successively as assistant engineer, gas and electrical engineer, assistant chief engineer and chief engineer.

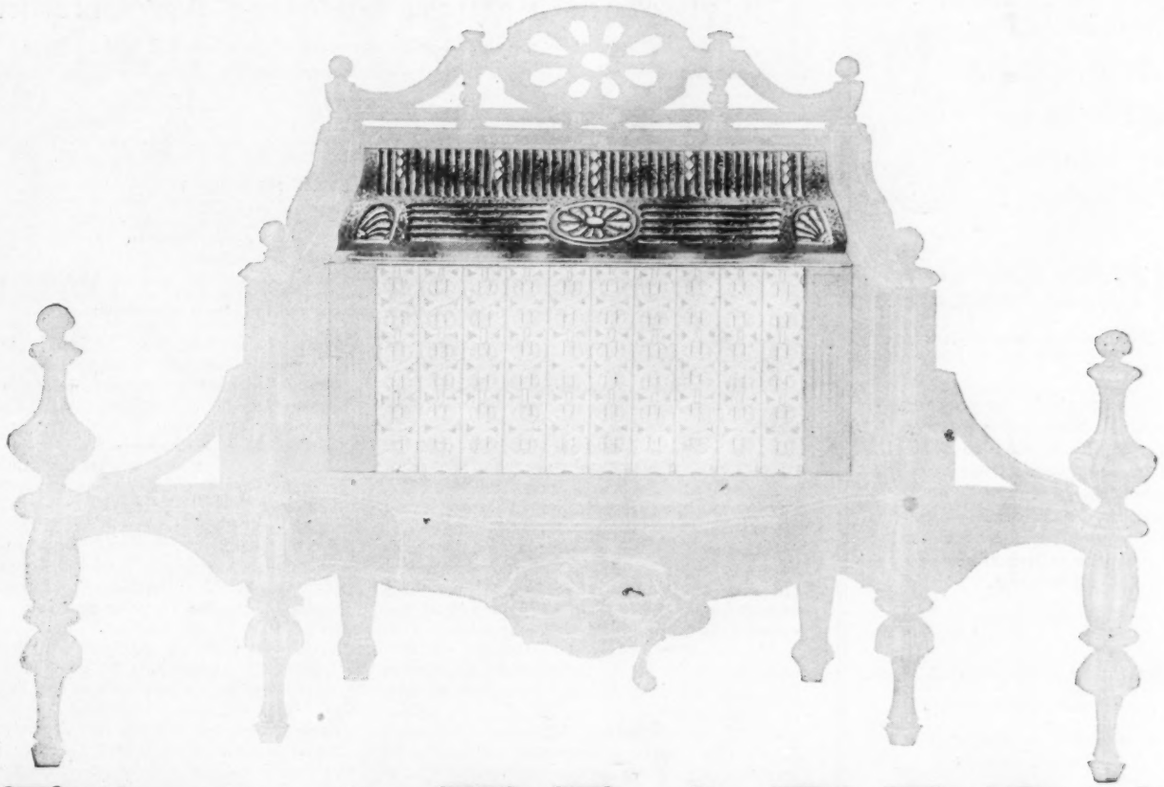
A. G. Mott, who has acted as transportation engineer of the commission for the last three years, has been appointed chief engineer to succeed Mr. Ready. A. V. Guillou, who has been gas and electrical engineer of the commission for more than three years, has been appointed assistant chief engineer.

ELECTROLUX SERVEL UNIT IS DESCRIBED BY MAKERS

Electrolux Servel Corporation, manufacturers of the Electrolux Servel gas refrigerator, have prepared a deluxe pamphlet describing the new line. Copies may be had by addressing the company at 51 East Forty-second Street, New York City.

G. S. BLAKE LEAVES EMPLOY OF ROBERTSON & CO.

Robertson & Company, Los Angeles contracting firm, announces that Geo. S. Blake has severed his connection with the organization, his place being filled by Geo. Sheltin, effective October 1.



The "HEADER"

Another Exclusive Welsbach Feature

The Header is placed above the glowers to improve combustion, hold each glower in place and to enable all glowers to be lighted evenly from bottom to top.

METAL HEAT REFLECTOR—Behind the glowers is placed a metal back which acts as a reflector, prevents absorption of heat by the heater itself and tends to send the heat straight out.

THE GLOWERS are made of clay that will withstand the most intense heat, are easily removed and are so held in place by the header that they cannot possibly fall out or get out of place.

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Write for literature and NEW LOWER PRICES.

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RADIANT GAS HEATERS

Are you including Minneapolis Controls in every heating installation?

The "MINNEAPOLIS" HEAT REGULATOR

The heart of the heating plant

Minneapolis is the proven control. National advertising makes it easy to sell. You are giving your customer the best there is and making additional profit for yourself. This means more satisfaction all around.

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Excels for Gas Service

The unusual care given to accuracy of diameter and welding qualities, makes Chester Pipe a favorite for gas lines.

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H. L. Eggleston
R. W. Garman

The three officers are also on the Executive Committee.

Meetings of the Executive Committee are held on the second and fourth Wednesdays of each month. The general membership meeting is held about the middle of each month, on mailed announcement from the Secretary.

THREE papers were on the program of the Association at its monthly meeting of Thursday, October 21. Jack Forline, personnel manager of the General Petroleum Corporation, gave a discussion on the topic "More Gasoline Through Safety," stressing the need for some type of effective safety organization in every company. Mr. Forline outlined a suitable form of safety organization for a typical small company.

Discussion on this paper was led by B. F. Masten, chief engineer of the Standard Gasoline Company. A number of members offered testimony on safety practice as developed in their different companies.

"Oil Cooling" was the subject of two papers, one by R. A. Bultman of the Union Oil Company, and the other which is printed in this month's issue, by H. A. Maxwell of the Standard Gasoline Company. E. R. Cox directed discussion on both the papers. Mr. Bultman's contribution was a follow-up to a paper presented at the previous monthly meeting on oil cooling in gasoline plants, by Mr. Cox. Mr. Maxwell treated the application of open coil type towers to oil cooling in gasoline plants. Discussion followed on the merits of different types of open coil and closed cooling equipment.

Dan Newton of the Newton Process Company entertained the gasoline men at the last general meeting with a report on his recent trip to Venezuela. His trip was one of investigation of oil properties, and he discussed various phases of the industry in that section in a humorous vein that was enjoyed by everyone

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Associate membership in the California Natural Gasoline Association may now be taken out for $5.00 instead of $10.00, the former fee. The memberships of those having paid the $10.00 fee will be extended, or the difference refunded, according to members' wishes. New membership blanks were distributed at the October meeting.

Announcement of the free distribution to all members of the first bulletin of Association proceedings was made at the last meeting. The bulletins consist of most of the papers presented before the Association to date, assembled and bound together in convenient form for reference. Copies will be supplied gratis to all joining the Association.

Tentative plans are forming for the organization of a branch of the California Natural Gasoline Association at Taft, Calif. Many gasoline men of that section are interested in the work of the group, but find it impossible to attend the monthly meetings. The executive committee has the matter under consideration at the present time, and some action is to be looked for in November.

Bauer, Reynolds Withdraw *from* Gasoline Industry

HARRY J. BAUER and Kenyon L. Reynolds, president and general manager, respectively, of the Pacific Gasoline Company, have definitely withdrawn from active participation in the natural gasoline industry, with the merger of Pacific Gasoline Company into Standard Oil Company ownership as the Standard Gasoline Company.

Both of these prominent executives have been deeply interested in the California natural gasoline industry for the past decade. Mr. Bauer, since the reorganization of Wallace Refineries into the Pacific Gasoline Company in 1921, has headed that organization, seeing it develop from a nine-plant machine to a 24-plant—the largest organization of its kind on the Coast.

L. F. Chandler

MR. L. F. CHANDLER, general superintendent of the Santa Maria Gas Company, and a member of the Pacific Coast Gas Association since 1910, passed away at his home in Santa Maria, Calif., on October 6.

Commencing in Chandler Valley near Union City, Pennsylvania, June 18th, 1869, Mr. Chandler's life was typically that of a thorough gas man from start to finish. His working days began in the oil fields of Pennsylvania, and he soon was engaged in the laying of natural gas lines to several of the small towns in Warren County. After working with the Pittsburgh Gas Company, Mr. Chandler was employed with the Detroit City Gas Company from 1890 to 1894. Then he became associated with E. S. Hoyt in the construction of an artificial gas plant at Canistio, New York. With E. S. Hoyt, he again constructed and operated a gas plant at San Luis Obispo, California.

In 1895 Mr. Chandler returned with his family to Detroit and became identified with the Michigan Stove Company, merged into the Garland Stove Works, but only for a short period, until he became associated with the Detroit City Gas Company, taking part in laying the line across the lake to transport natural gas from Canada to Detroit.

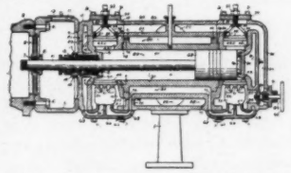
In 1902, Mr. Chandler and his family came to California to operate the gas plant in San Luis Obispo.

The San Luis Obispo plant rapidly grew in size and importance. In 1906 he went to Santa Maria as general superintendent of the Santa Maria Gas & Power Company, subsequently merged into the Santa Maria Gas Company of which company he was superintendent at the time of his death. In 1915, this company absorbed the artificial plant in San Luis Obispo.

THIS MONTH'S PATENTS PERTAINING TO THE INDUSTRY

1,595,370. GAS COMPRESSOR. ELMER A. WATTS, Springfield, Ohio, assignor to The Miller Improved Gas Engine Company, Springfield, Ohio, a Corporation of Ohio. Filed Mar. 23, 1923. Serial No. 17,578. 2 Claims. (Cl. 230—32.)

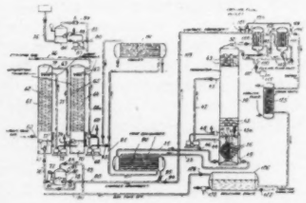
1. In a compressor characterized by having a compression cylinder, inlet and exit passageway and valves therefor, an integral valved head having a communicating passageway from the inlet valve to the outlet valves contained within the integral casing whereby the contents of the compressor may circulate through the valves, the integral passageway, and the cylinder, without build-



ing up pressure when said passageway is opened, and a manually operated valve member for controlling said passageway, said manually operated valve being unconnected with said inlet and outlet valves and located between the same in the cylinder head.

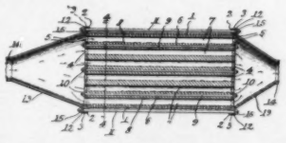
1,584,504. GASOLINE-RECOVERY APPARATUS. HAROLD B. BERNARD, Tulsa, Okla., assignor to Sinclair Oil and Gas Company, Tulsa, Okla., a Corporation of Maine. Filed June 20, 1924. Serial No. 721,164. 8 Claims. (Cl. 196—8.)

1. An apparatus for separating absorbed constituents from liquid absorbents comprising an exhausting tower, means for promoting gas and liquid contact and heat exchange in the tower arranged above the bottom thereof, a partition arranged in the lower part of the tower dividing it into a heated supply compartment and a discharge compartment opening upwardly into the tower, means for introducing charged liquid absorbent into the supply compartment, means for withdrawing liquid from the supply compartment and discharging the withdrawn liquid into the tower over the upper part of the contact promoting means, means for conducting liquid from the lower part of the contact promoting means to the dis-



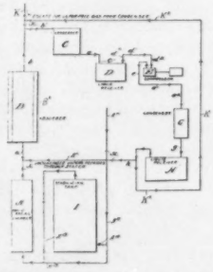
charge compartment, and connections for withdrawing vapors and gases from the upper end of the tower and for withdrawing liquid from the discharge compartment.

1,595,711. GAS PURIFIER. JEAN A. CORNELIER, Grants Pass, Oreg. Filed Jan. 21, 1926. Serial No. 82,869. 2 Claims. (Cl. 23—284.)



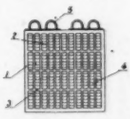
1. The combination with a casing, apertured heads at the ends thereof, and means for directing gases to one of the heads, of a core housed within the casing and abutting against the heads, said core having passages communicating with the apertures in the heads, and including means for effecting a chemical change in toxic gases entering the core.

1,595,682. PROCESS OF RECOVERING CONDENSABLE VAPORS FROM GAS MIXTURES. GEORGE G. OBERFELL, Tulsa, Okla., and GEORGE A. BURRELL, Pittsburgh, Pa., assignors to Gasoline Recovery Corporation, a Corporation of Delaware. Filed May 20, 1919, Serial No. 298,559. Renewed Jan. 5, 1926. 4 Claims. (Cl. 196—8.)



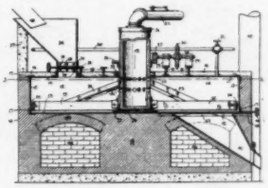
1. The process of removing hydrocarbon vapors from a gas mixture and recovering them in liquid form, which consists in passing the gas mixture through a solid absorbent medium consisting of activated charcoal which absorbs the vapors, then subjecting the solid absorbent to heat, while under a pressure, to drive the absorbent vapors out of the absorbent, then condensing a portion of the vapors driven off, at a relatively low temperature, then compressing the remaining portion of said vapors at a pressure greater than that of the atmosphere and condensing the same.

1,583,009. FIRE-BRICK PANEL. JEAN RENE CHARLES FRANÇOIS XAVIER REILLE, Paris, France. Filed Nov. 10, 1924. Serial No. 749,109. 1 Claim. (Cl. 110—173.)



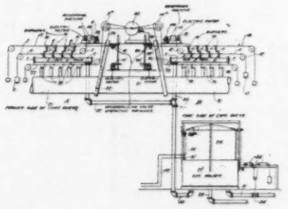
A refractory panel for furnace doors, covers, dampers, arches and the like comprising a lattice work frame and separate groups comprising a small number of fire bricks secured in the openings of said lattice work, the inner and outer sides of said groups being free.

1,595,301. APPARATUS FOR EXTRACTING GAS FROM BITUMINOUS MATERIALS. EMANUEL W. HARTMAN, Miami, Fla., assignor to Hartman Interests Inc., Los Angeles, Calif., a Corporation of Nevada. Filed May 31, 1921. Serial No. 474,033. 4 Claims. (Cl. 202—14.)



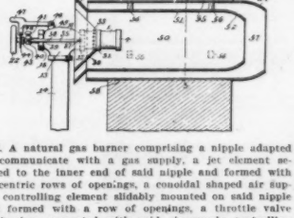
1. In an apparatus for extracting gas, a circular retort, having a bottom plate, means for feeding the charge to be treated thereto, means for heating the entire bottom plate of the retort, a tower rotatably mounted at the center of said retort, means operated by said tower for stirring the charge constantly during the operation of the apparatus, said tower having openings into which the extracted gas escapes from said retort, and an outlet to which the residue is guided by said stirring means.

1,597,365. GAS CONTROL FOR COKE OVENS. CLAIRE T. KEIGLEY, Woodward, Ala., and GEORGE LAMBERTON, Lorain, Ohio. Filed July 7, 1921. Serial No. 482,953. 4 Claims. (Cl. 202—9.)



1. In a gas control system for by-product coke ovens, the combination with a series of gas burners on each side of said ovens for heating said ovens, a gas holder, mains leading from said gas holder to said burners, and controlling and reversing valves for controlling the flow of gas from said mains to said burners, of electric motors for operating said valves, electric circuits for said motors, and means operable by said gas holder for completing the electric circuits to said motors to cause said motors to close said valves when the gas in said gas holder falls below a predetermined pressure.

1,584,546. NATURAL-GAS BURNER. MORTIMER JONES, Fort Worth, Tex. Filed Sept. 4, 1925. Serial No. 54,517. 6 Claims. (Cl. 158—119.)



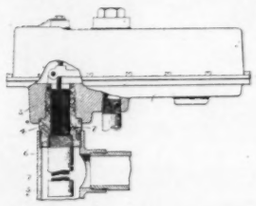
3. A natural gas burner comprising a nipple adapted to communicate with a gas supply, a jet element secured to the inner end of said nipple and formed with concentric rows of openings, a conoidal shaped air supply controlling element slidably mounted on said nipple and formed with a row of openings, a throttle valve mechanism connected with said air supply controlling mechanism and operating in said nipple and provided with means to simultaneously control said jet element and supply element, and a shell surrounding said supply element, nipple and jet element, spaced therefrom and projecting inwardly from said jet element and providing a mixing chamber with which the openings in the air supply and jet elements communicate, said shell having a flaring outer end and a converging inner end, said converging inner end spaced a greater distance from said jet element than the distance between the latter and said flaring outer end.

1,584,291. GASEOUS FUEL. JOHN HARRIS, Cleveland, Ohio. Filed Dec. 6, 1923. Serial No. 678,810. 1 Claim. (Cl. 48—205.)

A gaseous fuel particularly useful for the cutting of metal and consisting essentially of a mixture of water gas with the vapor of ether in proportions of from not materially less than 2½ to not materially more than 5 parts by volume of the ether vapor, to from not materially more than 97½ to not materially less than 95 parts by volume of the water gas

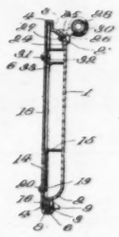
1,595,876. THERMOSTATIC CONTROLLER FOR GAS WATER HEATERS. BERNARD RYAN, New York, N. Y. Original application filed Nov. 29, 1920, Serial No. 427,257. Divided and this application filed Jan. 2, 1924. Serial No. 684,030. 2 Claims. (Cl. 297—14.)

1. In a thermostatic controller for gas water heaters, the combination with the water container having an opening therein, of a closure for said opening formed of a metal not subject to electrolysis with respect to copper when in contact with water, a copper thermostatic member secured in said closure in contact with the water,



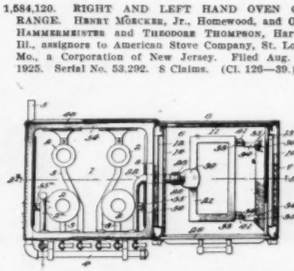
a casing of die-cast metal supported by said closure out of contact with the water in the container, and a control mechanism in said casing operatively connected with the thermostatic member.

1,584,121. OVEN DOOR. HENRY MOECKER, Jr., Homewood, and THEODORE THOMPSON, Harvey, Ill., assignors to American Stove Company, St. Louis, Mo., a Corporation of New Jersey. Filed Sept. 28, 1925. Serial No. 59,029. 17 Claims. (Cl. 126—190.)



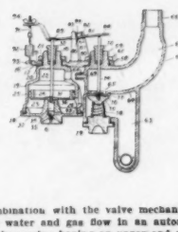
1. The combination with a stove door, of a hinged element overlapping the stove door, the hinged element having screw-threaded openings, screws passing from the inside of the door into the said openings, and a lining applied to the inner side of the door and concealing the said screws.

1,584,120. RIGHT AND LEFT HAND OVEN GAS RANGE. HENRY MOECKER, Jr., Homewood, and OTTO HAMMERMEISTER and THEODORE THOMPSON, Harvey, Ill., assignors to American Stove Company, St. Louis, Mo., a Corporation of New Jersey. Filed Aug. 29, 1925. Serial No. 53,292. 8 Claims. (Cl. 126—39.)



1. A gas range comprising an oven and an open burner part, said oven having a reversible burner with a central gas opening, the open top having a manifold, and a single oven burner manifold extending from the said open burner manifold substantially to the center of the oven and through its walls and connected with the oven burner, whereby the burner may be reversed and placed in position for either a right or left hand oven without any change in their construction.

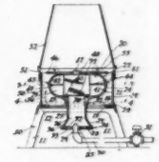
1,595,400. AUTOMATIC WATER-HEATER VALVE. ROBERT C. HOYT, Oakland, Calif., assignor to Hoyt Heater Company, Los Angeles, Calif., a Corporation of California. Filed Nov. 23, 1925. Serial No. 70,830. 6 Claims. (Cl. 236—31.)



1. In combination with the valve mechanism for controlling the water and gas flow in an automatic water-heater, a valve casing having an upper and a lower pressure chamber in communication with the water inlet of the heater, the casing being threaded at its lower end; and an internally recessed cap removably engaging said threaded end for collecting sediment carried with the water from the water inlet and into said casing, the cap being provided with means communicating with the recess therein for draining the water from the casing.

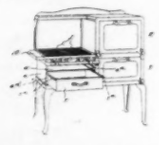
1,595,638. GAS HEATER. JAMES BEARD, Pasadena, Calif. Filed June 9, 1924. Serial No. 718,788. 4 Claims. (Cl. 126—85.)

1. In a gas heater of the character described, a burner comprising an upper annular bowl shaped member having triangular indentations in the lower edge, a flange above the top of said indentations, a lower member supporting said upper member, said lower member having an upper portion in the form of an annular bowl of the same diameter as the upper member, a series of gaseous fuel jets being formed when the upper and lower members are placed together, a flange plate resting on top of said



upper member and of the same diameter as the flange above the fuel jets, and a mixing chamber depending from said lower member, said mixing chamber being in the form of a hollow cylinder having a central aperture adapted to admit a fuel inlet pipe.

1,595,751. RANGE. CLARE E. BEECH, Mansfield, Ohio, assignor to The Tappan Stove Company, Mansfield Ohio, a Corporation of Ohio. Filed Oct. 15, 1924. Serial No. 743,679. 4 Claims. (Cl. 126—39.)



1. A stove structure comprising a frame including a fixed burner box open at the top, bottom and front, a removable grate section at the top, a removable burner section under the grate section, and a removable drawer under the burner section, the removal of the grate, burner and drawer sections forming an opening from top to bottom thru the burner box, in which opening a man may stand to carry the stove.

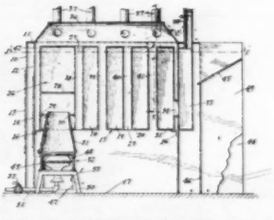
1,584,210. BURNER. GUNTHER H. BRUNOW, Port Arthur, Tex., assignor to The Texas Company, New York, N. Y., a Corporation of Texas. Filed Sept. 7, 1923. Serial No. 661,352. 3 Claims. (Cl. 158—116.)

1. In a gas burner, a tube having one end thereof externally tapered, a plurality of longitudinally extending ribs disposed on the tapered end, a peripheral shoulder disposed on the tube at the inner end of said ribs, a removable burner cap, internally tapered throughout a portion of its length and having a plurality of circumferential slots, disposed on the end of the tube and adapted to be seated on said ribs and the peripheral shoulder, and means at the opposite end of the tube for introducing gas and air therein.

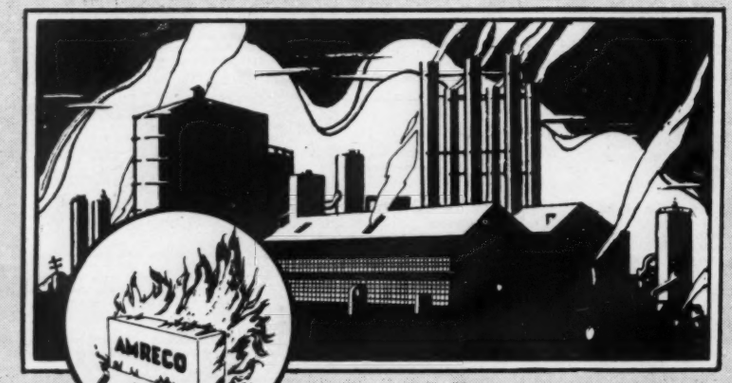
1,595,945. SAFETY SIGNAL DEVICE FOR GAS PIPES. WLADISLAW KAPLON, Norwich, Conn. Filed June 4, 1926. Serial No. 113,787. 2 Claims. (Cl. 116—70.)

2. In a device for gas stoves, a body, a cylindrical hollow member adapted to engage inside the said body, reeds molded therein and depending therefrom, protruding blocks attached to the said free extremities of the said reeds, as a means of signifying the escape of gas through a burner of a gas stove, a sleeve adapted to slidably engage in the said body, said sleeve provided with a tapered inner periphery, as a means of varying the distance between the said blocks and the said tapered inner periphery of the said sleeve.

1,595,639. HOT-AIR GAS FURNACE. JAMES BEARD, Pasadena, Calif. Filed July 5, 1924. Serial No. 724,400. 2 Claims. (Cl. 126—116.)



1. A hot air gas furnace comprising an outer casing, an inner casing within said outer casing, said inner and outer casing being connected at their upper ends, a radiator within said inner casing comprising a plurality of vertically mounted compartments in spaced relation, each of said compartments being of rectangular shape in vertical and horizontal cross section and joined by oppositely disposed passages extending from top to bottom, a vent chamber connected to the outer side of said inner casing, a conduit connecting said vent chamber and a compartment of said radiator adjacent said vent chamber, a gas heater within said inner casing having a chimney extending through an opening in the compartment of said radiator, directly above said heater, and a cover over said inner casing having openings therein and pipes leading therefrom.



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Modern Kitchen Equipment

(Continued from Page 31)

at stated times. Gas broilers are always ready, and without operation cost until actually in use cooking food.

WAFFLE IRON

Waffles, the American's breakfast, is cooked on a stove and waffle iron. The frame and legs of this stove are made of angle iron and black japanned. A star type of burner is placed directly under each pan; burners can be operated individually.

GRIDDLES

Differing from waffles, hot cakes are cooked on a very smooth surface, highly polished. The polished surface of the gas-burning griddle is made of cast iron, resting on a steel frame; directly below the plate are several bar type gas burners; all around the edge of the plate is a grease groove with waste pipe connection.

FRY PLATE

Fry plates are very similar in construction to griddles, having a highly polished cast iron plate resting on a steel frame and using a like kind of bar type gas burner. They differ from the griddle, however, in that the fry plate has a standing rim on three sides with a large grease groove in front with waste pipe connections. A fry plate is one of the most necessary fixtures for every restaurant, as nearly every article of food can be cooked on it.

HOT PLATES

Many times it is desired that the fire come in direct contact with the vessel in which food is being cooked, where every B.t.u. may be utilized. In such cases an open type hot plate is brought into use. These plates have a grille or fret work top so that the fire impinges directly on the cooking utensil. One or more star type gas burners are used, depending upon the size of the plate.

GAS TOASTER

The making of good toast has always been a problem for every hotel and restaurant; in the past it has been an infernal nuisance; many devices, including electrical apparatus, have been designed for this purpose. One typical gas toaster is equipped with a bar type gas burner extended the full length of the toaster.

DISHWASHING MACHINE

Few persons realize with what ease dishes are cleansed in the modern hotel and restaurant. Racks of dishes are not only washed and rinsed automatically in the modern power dishwasing machine, but are even carried through the machine automatically—on a heavy chain-conveyor operated by the same motor which drives the pump. As rack after rack passes through the machine, every dish, every glass and cup, every piece of silver is cleaned thoroughly, uniformly, without any attention on the part of the operator. Types of this machine are rated by the manufacturer to handle as many as 18,000 dishes per hour.

Many of the smaller cafes and restaurants use a smaller type of dishwasher. These machines are modest in cost and soon pay for themselves in the saving of time and labor. Dishwashing machines of the smaller type are usually equipped with gas burners to maintain water at the required temperature. Washing water should remain constant at 160 degrees, Fahr. A mistaken idea of many

is that washing water should be boiling hot; such is not the case, however, as boiling water simply cooks the food on the dish. In large installations and when available, live steam is injected to maintain water at constant temperature.

DISH WARMER

Nothing is so aggravating to the patron as to be served hot foods on an ice cold plate. It just isn't being done today in the modern cafe and hotel. Special gas-fired dish warmers are used to keep dishes warm and ready for use. After dishes are washed they are placed in these warmers; many steam tables and serving tables are equipped with warming closets, which obviate the necessity of having a special dish warmer. Such fixtures are usually of special manufacture as to dimensions, etc., and so constructed to fit into the space available.

ROLL WARMER

It is often very mysterious to the uninitiated how restaurants can serve hot rolls at all times. The construction of a roll warmer is very similar to that of a dish warmer, except that a roll warmer is equipped with a humidifier, which keeps the air inside of the warmer very moist and quite close to the saturation point. Without a humidifier, rolls placed in a warmer would become as hard as Pharaoh's heart.

Gas appliances in commercial kitchens *must* operate economically. Hotels and restaurants are operated for the purpose of making money for their owners. The margin of profit is extremely small. Consequently the owner is unrelenting in details so as to maintain perfect harmony between *receipts* and *expenditures*.

Tentative Definitions

(Continued from Page 27)

to the possible volume that could flow if the specified maximum demand continued during the whole interval and should be expressed in per cent.

PEAK (A.G.A.)
Is that period of time in which the maximum demand occurs.

ONE HOUR PEAK (A.G.A.)
Is that time of a day when the maximum demand of gas during one hour occurs.

24 HOUR PEAK (A.G.A.)
Is that day on which the maximum 24 hour demand occurs.

PEAKS (A.G.A.)
Peaks may be expressed by stating the time of occurrence and the demand. Secondary peaks would be those selected from a different day and season. For example:

One hour peak (primary) Thanksgiving day—Nov. 26, 1925, 11 to 12 a. m, 2,600,000 cu. ft.

One hour peak (secondary) Sunday, March 14, 1926, 11 to 12 a. m., 2,370,000 cu. ft.

24 hour peak (primary) Tuesday, March 2, 1926, 23,126,000 cu. ft.

24 hour peak (secondary), take a maximum day in May, June or September.

OFF-PEAK (A.G.A.)
Is any period of time between peaks where the demand is materially less than the maximum, and which, because of the factors controlling the demand can be relied upon not to change.

CALIFORNIA GAS CONSUMERS DOUBLE IN SIX YEARS

Gas consumers in California have increased in number from 562,512 in 1920 to 1,092,310 at the beginning of 1926, by report of the California Railroad Commission.

The 2 essentials
for extracting gasoline
from natural gas.

FIRST:
TRANSFER gasoline from the gas, its natural carrying medium, to absorption oil, a medium from which it can more readily be isolated.

SECOND:
CAMPBELL OIL FROTH ABSORBERS effect this transfer efficiently and thoroughly.
SEPARATE the gasoline thus absorbed from the oil so that this "carrier" may go back to the absorber "empty" for another load.
CAMPBELL OIL FROTH STRIPPERS effect this separation with a low agitation ratio and their reflex fractionating section cuts the load on the dephlegmator surprisingly.
One of these strippers in conjunction with a pipe coil Dephlegmator, about which we will be glad to tell you, makes a combination that for steady production and point and color control, cannot be excelled in the opinion of many operators who are now using them.

J. A. Campbell
Consulting—Designing—Constructing
P. O. Box 669 Natural Gas Engineer Long Beach, Calif.

CAMPBELL
OIL FROTH
absorber

J. B. GILL CORPORATION
NATURAL GAS ENGINEERS
COMPRESSOR PLANT DESIGN AND CONSTRUCTION
P. O. BOX 669
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OIL METERS

The EMPIRE

Positive displacement, oscillating piston design.

Different from every other type of meter.

Unsurpassed in over forty years for accuracy, durability, and low cost of upkeep.

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Gas Companies

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EMPIRE Oscillating Piston Oil Meters are fully described and illustrated in Circular 110-W. Send postal for your copy.

National Meter Company

299 Broadway, New York

Chicago Boston Atlanta
San Francisco Cincinnati
Los Angeles

NATURAL GAS GASOLINE OPERATIONS

Compiled by J. W. MASHAW

Department of Commerce, Bureau of Mines, Division of Mineral Resources and Statistics

ONE hundred and forty-five natural gas gasoline plants, with a daily indicated capacity of 1,134,171 thousand cubic feet, report a recovery of 32,778,266 gallons of natural gas gasoline from 25,208,497 thousand cubic feet of gas treated in September. This is an increase of 624 barrels in daily average production.

Utilization of natural-gas gasoline amounted to 766,582 barrels, an increase over August of 45,520 barrels. Daily average utilization of 25,553 barrels was 461 barrels less than daily average production of 26,014 barrels.

Stocks of natural-gas gasoline at the end of September amounted to 298,111 barrels of which 29,237 barrels were reported by natural-gas gasoline plant operators and 268,874 barrels by refinery operators. This is an increase of 13,853 barrels over August stocks. This stock figure of 298,111 barrels is approximately twelve days supply at the current rate of consumption.

Production of gasoline during the month of September amounted to 3,986,387 barrels, a daily average of 132,880 barrels. This is a decrease of 217,044 barrels or 5.16 per cent under the August output and 702,137 barrels or 21.38 per cent over the output of September, 1925.

Of the gasoline produced 4,411 barrels were reported as finished gasoline produced by natural gas gasoline plant operators. Stocks of gasoline show an increase of 55,271 barrels during September and at the end of the month amounted to 9,609,958 barrels. This stock figure includes 200 barrels of finished gasoline reported by natural-gas gasoline plant operators.

CALIFORNIA NATURAL GAS GASOLINE PRODUCTION, DISTRIBUTION AND STOCKS

September, 1926

PRODUCTION

Type of Plant	*Gas Treated M Cu. Ft.*	*Natural Gas Gasoline Produced Gallons*	*Gasoline Recovery per MCF Gas Treated*
Oil Absorption	15,147,545	20,923,569	1.381 Gal.
Compressor	316,351	515,111	1.628 "
Combination Comp. and Oil Absorption	3,686,459	6,338,566	1.719 "
Combination Oil and Charcoal Absorp.	4,773,793	4.934,613	1.034 "
Charcoal Absorption	1,284,349	57,925	.045 "
Drip	.....	8,482	..... "
TOTALS	25,208,497	32,778,266	1.300 Gal.
Finished Gasoline produced at plants			4,411 Barrels

DISTRIBUTION

Stocks First of Month	.....	284,258 Bbl.
Production during month	.....	780,435 "
Quantity mixed with crude or unfinished oils	265,104 Bbl.	.....
Used in blending at Refineries	330,120 "	.....
Stocks end of month	298,111 "	.....
Used at Plants, Shortage and Evaporation losses	13,962 "	.....
Balance	157,396 "	.....
TOTALS	1,064,693 Bbl.	1,064,693 Bbl.

STOCKS

Natural-gas gasoline held by Natural gas Gasoline Plant Operators	1,227,936 Gal.	or 29,237 Bbl.
Natural-gas gasoline held by Refiners	11,292,708 "	" 268,874 "
TOTALS	12,520,644 Gal.	or 298,111 Bbl.
Finished Gasoline (Motor Fuel) held by Natural-Gas Gasoline Plant Operators		200 Barrels

Company Launches Sixth Annual Winter Lecture Course

THE Portland Gas & Coke Company has resumed its annual winter course of educational lectures for employees. The series is very comprensive and is divided into six sections: Production—Distribution—Utilization—New Business—Office—Accounting.

Employees are encouraged to sign up for the course of approximately 10 lectures in one or more sections. The course takes six months to complete and those employees attending all lectures in a course and receiving satisfactory marks on quiz papers are given a diploma.

Lectures are prepared by department heads and others who are specially familiar with the subjects. Mimeographed copies are given to the employees entered in the section a few days in advance of the lecture so that they may study them. The lecture period is divided into three parts, the first being devoted to a short talk in which the special features are stressed, the second part is devoted to answering questions which are written down by students; pencils and paper are furnished. In the third period each student is handed a typewritten list of questions on the subject matter of the paper and answers are written, on which marks are given.

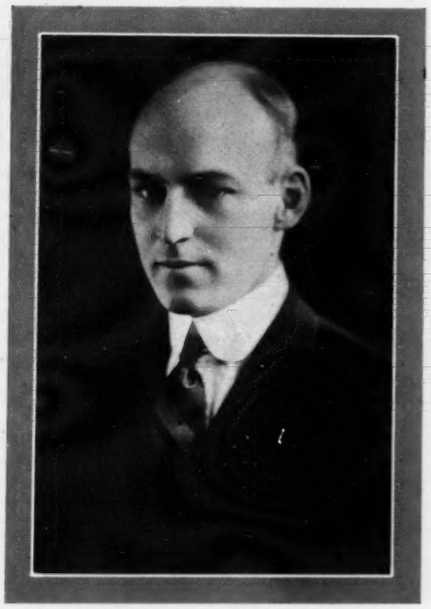
The company has gone to considerable expense in preparing lantern slides, etc., which are used to illustrate the first part of the lecture. Keen interest is taken by the employees. Much valuable information is brought out in the discussion and the questions asked form the basis for future revision of the papers.

For the 1926-1927 series 292 employees are enrolled. This is the sixth year in which the lectures have been given. The majority of lectures are given on company time.

Geo. Whitwell Now *with* Equitable Gas Company

GEO. WHITWELL, formerly general superintendent and new business manager of the Tacoma Gas & Fuel Company, Tacoma, Wash., and who more recently has had general supervision over the gas properties of the Byllesby Engineering & Management Corporation, has been appointed general manager of the Equitable Gas Company of Pittsburgh, Pa.

Mr. Whitwell's experience in the gas and related industries has been wide and varied.



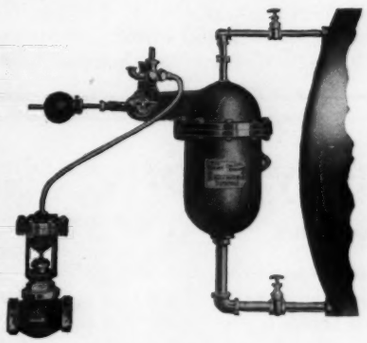
Geo. Whitwell

After his graduation from the Massachusetts Institute of Technology, in 1915, he followed the profession of electro-chemist for three years, helping in the development of the electrolytic zinc process of the Anaconda Copper Mining Company. On his return from service in France, with the photographic air service, he located in the West, doing commercial laboratory and research work for the Washington States Geological Survey on magnesite in eastern Washington. He then joined the faculty of the University of Washington, in the department of chemical engineering. During his three year connection with this institution he did much research work on the calorific values of illuminating gas, and represented the Washington companies at the time they secured the reduction of heating value standards. In this same period the Young-Whitwell Gas Process was developed at the Everett, Wash., plant of the Byllesby organization.

Resigning from the Washington University faculty Mr. Whitewell did consulting work for the Pacific Coast Coal Company, developing a briquette which is now sold extensively in the Northwest. He then supervised the installation of a number of Young-Whitwell Gas Process plants in various parts of the cuntry.

In December, 1920, Mr. Whitwell became consulting engineer for the Tacoma Gas & Fuel Company, taking the general superintendency of that company two years later. On May 1, 1925, he was appointed to the operating staff of the Byllesby Engineering & Management Corporation, having headquarters at Chicago.

Automatic Regulator for the Oil Supply in Absorber Tank



In the process of the manufacture of gasoline by absorbing the gasoline in oil and subsequently separating the gasoline from the oil by distillation, it is necessary to maintain a constant oil level in both the absorbing tank and the still.

For this purpose, we offer THE VIGILANT OIL LEVEL REGULATOR, which will accommodate itself to any type of absorber or steam still, and maintain a constant oil level under all conditions of temperature and pressure.

All of the new features embodied in the Vigilant Feed Water Regulator, which we invented and placed on the market twenty-five years ago, are to be found in the Vigilant Oil Level Regulator.

The Chaplin Fulton Mfg. Co.

Organized 1884—Oldest Builders of Gas Regulators in the County. Built in all Sizes, From 1 Inch to 24 Inches; For All Service. 1 oz. up to 1,600 lbs. Pressure to Square Inch.

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J. H. HILL, Representative

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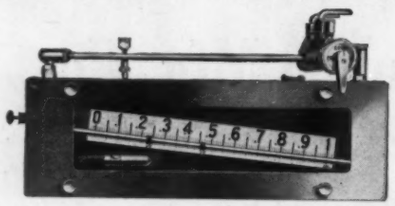
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WE ARE SOUTHERN CALIFORNIA REPRESENTATIVES
EQUALLY GOOD
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High and Low Pressure
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Service
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OXIDES
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Boosters
Photometers
Unison Telemetric Gauge
Gas Timers
Gauges
Street Department Tools
Gas Tape
Miller Packing

Connelly Iron Sponge & Governor Co.
New York San Francisco Chicago

Legislation *and* Taxation

(Continued from Page 24)

be more likely to be increased because of its simplicity and its reasonable certainty in calculating the revenue that could be raised. It is likewise obviously possible to increase the valuation of property, as has been frequently done, particularly in view of the classification of property for purposes of taxation. Certainly the opportunity for discriminatory treatment among the utility companies would not exist under an earnings tax. The industry seems likely to be ultimately confronted with the problem of either an earnings tax or an unfair and confiscatory tax levied upon the value fixed for rate-making purposes. Either form of taxation could be applied uniformly among the various states, but only the earnings tax could be equitable among the public utility corporations.

OBJECTION TO EARNINGS TAX

The most serious objection to the earnings tax as it now exists in California, is that its ease and certainty of collection, coupled with the fact that it is an indirect tax, obvious to the public only in the rates of the public utilities, has led to extravagance in public expenditures. It is much easier for the average state politician to advocate an increase in the tax rate than it is for him to advocate the practice of economy. In fact he is likely to be acclaimed for so doing as the champion of the people versus the public utility.

Uniform principles and practices in regulation, franchise grants and taxation among the various states would be mutually advantageous to the public and the public utility industry. Governmental control on the one hand would be less complex and thereby make more feasible intelligent cooperation among the states; on the other hand, such uniformity would both stabilize and simplify the problems of finance, operation and accounting for the public utilities. The political effect would be to preserve state rights.

Modern Appointments *in a* Small Plant

(Continued from Page 23)

set one foot higher above the grate bars than the standard setting. This was done to increase the combustion space above the grate bars for burning lampblack.

PURIFIERS

Two 10-foot purifiers were moved from the Monterey plant and installed to increase purifier capacity. One section of the purifiers is filled with shavings and used as a catch box ahead of the exhauster to keep any tar from getting into that machine. This has proven very satisfactory as no trouble has been experienced in starting the exhauster after it has been shut down all night.

All new pumps and blowers were installed, as the old equipment was not large enough for the new plant. All of the piping around the plant was placed overhead and painted different colors to indicate the use of each pipe line.

GAIN IN PLANT EFFICIENCY

The new plant was started the first of this year and has been operating very satisfactorily, making a saving over the old plant in the amount of oil used.

The total send-out of the Salinas plant for the year ended August 31 was 51,593,000 cubic feet, which is an increase of 24.51

per cent over the 41,438,000 cubic feet sent out during the previous 12-month period. The maximum send-out for one day during the month of August was 188,000 cubic feet. That this plant is designed to take care of growth in load for some time to come is indicated by the fact that the maximum day's send-out in August was 31.33 per cent of the plant capacity. The efficiency of the present plant for the month of August was 10.2 gallons per thousand cubic feet made, compared with 11.23 gallons during the month of August a year ago, before the new plant was put into operation.

Employee Meetings

(Continued from Page 21)

the dignity and importance of the job, and launch out in lengthy, sleep-inducing introductions or explanations that put the seal of doom on the meeting at the outset.

The commonplace must be avoided as the plague. No one wants to sit through an evening of commonplace speaking or entertainment. Just there is where a mistake is so often made. Why do people think that when they get before an audience they must be "stagey," formal and tiresome? It is so rare for an amateur speaker to be natural when he gets on the platform that when one does he receives credit for originality and punch far beyond his deserts.

It is not enough just to provide the "makin's" of a good meeting. An audience must be accumulated. There is quite a competition in this day in the collecting of audiences. The theaters, clubs, churches, pleasure resorts, cafes, lodges, the squared circle—all are doing it, or trying to. Your company meeting has to compete for its share of the potential patronage. You must use the means, or some means, to exploit your program as attractively as possible if you expect to fill your auditorium. A simple announcement won't be sufficient.

A well-written and well-displayed article in the house organ of course will be used. Follow-up bulletins will help immensely. Word-of-mouth propaganda, through well-placed publicity aides, has no superior. Use every means possible to interest your constituency. Then if you don't betray its confidence by putting on a poor meeting it will be easier next time to "get 'em out."

Of course there are certain types of meetings where the attendance may reasonably be made compulsory. The audience, for the greater part, will not resent this, if the occasion is of grave enough importance.

After all, the production of a good meeting is chiefly a matter of leadership and planning; of personality. And in spite of all your precautions, sometimes your "foot will slip" and something go wrong to cancel all your care and effort.

It's a big job—holding a successful meeting of any kind, and no one can tell anyone else just what to do or how to do it. But it can be done. And it's worth the effort!

PANAMA COMPANY PUTS GAS IN HIGH SCHOOL

Gas has been installed in the domestic science department of the Balboa, R. P. high school, by the Panama-Colon Gas Company. The equipment consists of gas plates, portable ovens and demonstration ranges for the instructor.

RICHFIELD BRINGS IN TWELVE MILLION FOOT GASSER

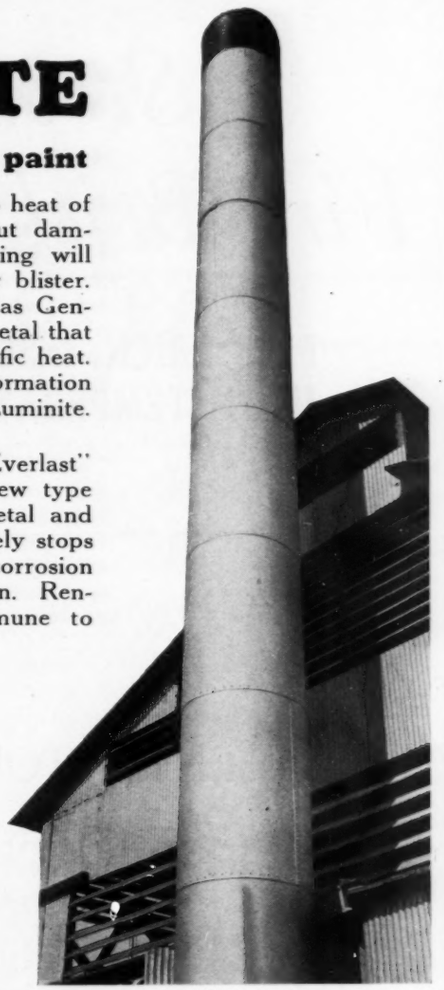
East of Fellows, Calif., Richfield Oil Company has brought in a 12,000,000 cu. ft. dry gasser.

LUMINITE

the 800° heat resisting paint

This paint can be subjected to heat of 800° for long periods without damage. Quick heating or cooling will not cause it to crack, chip or blister. It is especially adapted for Gas Generators, Smoke Stacks—any metal that is constantly subjected to terrific heat. Let us send you complete information and our rigid guarantee on Luminite.

Also ask us for data on "McEverlast" Protective Coatings . . . a new type of preservative for wood, metal and concrete. Positively stops and prevents corrosion and disintegration. Renders wood immune to termites (white ants), dry and damp rot.



This stack at the W. J. Latchford Company, Glass Manufacturers, Los Angeles, is painted with LUMINITE.

McEVERLAST
PROTECTIVE COATINGS

Everlasting Paint and Sales Co.

510 West 6th St.
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8

FITTINGS

You can order fittings of any kind for immediate delivery from our large stock.

We also produce:

FLINTCAST **CORROSIRON**
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PACIFIC FOUNDRY COMPANY
Harrison and Eighteenth Streets,
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HIGH TEMPERATURE CEMENT

High Grade Refractories
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PIPE

Montague-Wade Safety Water-Tube Boiler

Guaranteed more pounds pressure, horse-power for horse-power. Gets up full head of staem quicker—won't blow up—can be cleaned quickly—easily.
1 to 20 h. p. and larger.
Full details and prices upon application.

Montague pipe and other steel products have stood the test of time. You'll find it a good investment to use them.

Riveted Steel Pipe
Well Casing
Concrete Forms
Stacks

Welded Steel Pipe
Oil & Water Tanks
Siphons
Flumes

MONTAGUE PIPE & STEEL CO
San Francisco California

Success *in* Advertising

(Continued from Page 22)

Lend a helping hand in your advertising; tell your prospect something which is going to be a real benefit to him. Never mind what your competitors are going to do about it; what you want is your prospect's good will. If your products are such that the appeal shall be that of the service which the advertiser can render to the already overworked prospect, bring in a note of understanding and sympathy and make a frank offer of cheerful service.

GENERALITIES WON'T DO

Avoid the abstract as a pestilence. The abstract is not a picture, and we should advertise in word pictures as well as in real pictures. Glowing generalities are a fizzle, for they are meaningless; they simply fill space where a real idea is lacking.

As a parting thought always forget yourself as the advertiser. Look at your advertising as if you were a stranger and see if the advertising really does create desire. If it does, all is well; if it does not, do not release it or you will be throwing money away. If you cannot "get the hang" of it yourself get a specialist who knows how to tell your story in the right way.

SOUTHERN COUNTIES SAVES BY GAS UNIT AT VENICE

Coming as authentic evidence of the economies which may be effected through the use of gas-fired equipment, the Southern Counties Gas Company has replaced a steam-driven compressor unit installed at its Venice, Calif., holder station with a 170 horse power four cycle gas-engine-driven Cooper compressor. This change was made only after careful estimate of relative operating costs, from which the conclusion was reached that several thousands of dollars would be saved yearly by the introduction of the gas unit. The chief item of saving is that of labor, for the load is intermittent on this station, and keeping steam up means heavy "stand by" charges that have been done away with through the new equipment.

The compressor has a daily capacity of 5,000,000 cu. ft., and was installed at a cost of about $17,000.

Breaking *into* Print

(Continued from Page 20)

until after he had become accustomed to its operation. For we find that users may be boosters or knockers, and it is less probable that a user will go out and knock an appliance if it is published to the whole world that he has just purchased one. That would reflect on his good judgment.

We have told about procuring newspaper cooperation. That is the smallest part of the problem of selling appliances. The big problem is to procure dealer cooperation. It avails us nothing, if the newspaper broadcasts page ad after page ad, and runs columns of publicity, if the dealer sits back indifferently and does not follow up with window trims, good interior display and intelligent aggressive salesmanship. For in the final analysis, it is upon the sales floor that sales are made—not in the newspaper columns. Newspaper advertising was never intended to sell merchandise; it creates an acceptance. It only paves the way for the salesman, who must use his own intelligence in putting over the final punch, and getting his customer's "John Hancock" upon the dotted line.

A. G. A. Convention

(Continued from Page 18)

during the week

"We do not have to go back so very many years in our recollections of these gatherings to find (if we look over our old programs and recall the general character of them) a very decided difference between what took place in those conventions and what has been taking place here this week.

"In former conventions which I can recall, there was a decided strain of doubt running through our proceedings. There was wondering and inquiry—if not plainly expressed, at least implied—as to whether the gas industry was going forward or whether it was standing still or slipping backward.

"The doubts have gone—they have been dissipated. It seems to me that has been manifested in the programs of these general sessions and especially in the sectional programs of this convention. We know that we still have problems, but we are no longer guessing what they are. We are no longer afraid of attacking them in front and overcoming them.

"It seems to me this week has been a demonstration of this new grip the gas industry has got upon itself and upon its opportunities and its possibilities and the ways and means of realizing them. To put it in the language of the street, it seems to me this week has reflected that 'We know where we are at. We are on our way. We know where we are going.' There is no longer any doubt about it. The word is, "'Let's go.'"

The list below contains most of the names of Western men attending the Atlantic City sessions: F. M. Banks, J. Brombacher, A. B. Day, F. H. Holden, Jay E. Jenkins, A. B. Macbeth, Lee B. Mettler, Otto Neisser, G. H. Unkefer, (Los Angeles, Calif.); W. M. Thompson, (Pasadena, Calif.); Arthur F. Ketz, (Santa Barbara, Calif.); G. P. Egleston, Robert W. Miller, (San Francisco, Calif.); W. S. Dole, Grace Jo Mason, (Tucson, Ariz.); Arthur Prager (Albuquerque, N. M.); D. J. Young (Tacoma, Wash.); C. R. Miller, Silas E. Skelley, (Portland, Ore.); A. A. Salmon (Spokane, Wash.); Geo. R. Horning, Geo. Rust (Salt Lake City, Utah); E. P. Gartland, R. L. Jackson, A. A. Klinge, Geo. E. Lewis, C. E. Muehlberg, R. G. Munroe, R. H. Taylor, William Virtue, Geo. Wehrle (Denver, Colo.); Charles E. Sabin, (La Junta, Colo.)

FURNACE ASSOCIATION IN ACT OF INCORPORATING

Geo. Finney, secretary-treasurer of the Gas Furnace Association of Southern California, announces that this group of furnace manufacturers is in the act of incorporating, to give the Association an official standing before legislative bodies and other agencies dealt with in its work of raising standards in the gas furnace industry.

SECOND ANNUAL CONVENTION FOR ROCKY MT. ASSN.

From December 1 to 3 the oil and gas men of the Rocky Mountain region will gather in convention—the second annual convention of the Rocky Mountain Oil and Gas Association. Sessions will be at the Hotel Rainbow in Great Falls, Montana.

WEST TEXAS MEN FORM OIL AND GAS GROUP

Producers and operators in the Panhandle, Texas, have organized the West Texas Oil & Gas Association. R. G. Barnum has been elected president.

Pioneer
PIPE COVERING

will protect your buried pipe lines from corrosion and erosion in any kind of soil...and will protect your open pipe lines from oxidation. Hundreds of pipe companies are insuring their pipe line investment with *Pioneer* asphalt-saturated pipe covering.

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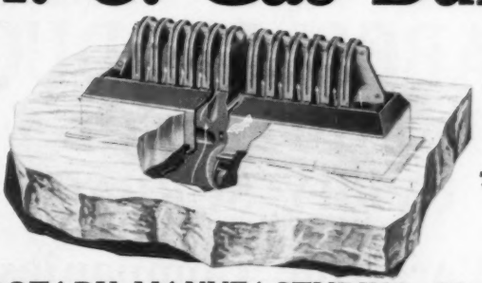

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Insures High Furnace Temperatures

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YOU CAN RELY ON RELIANCE

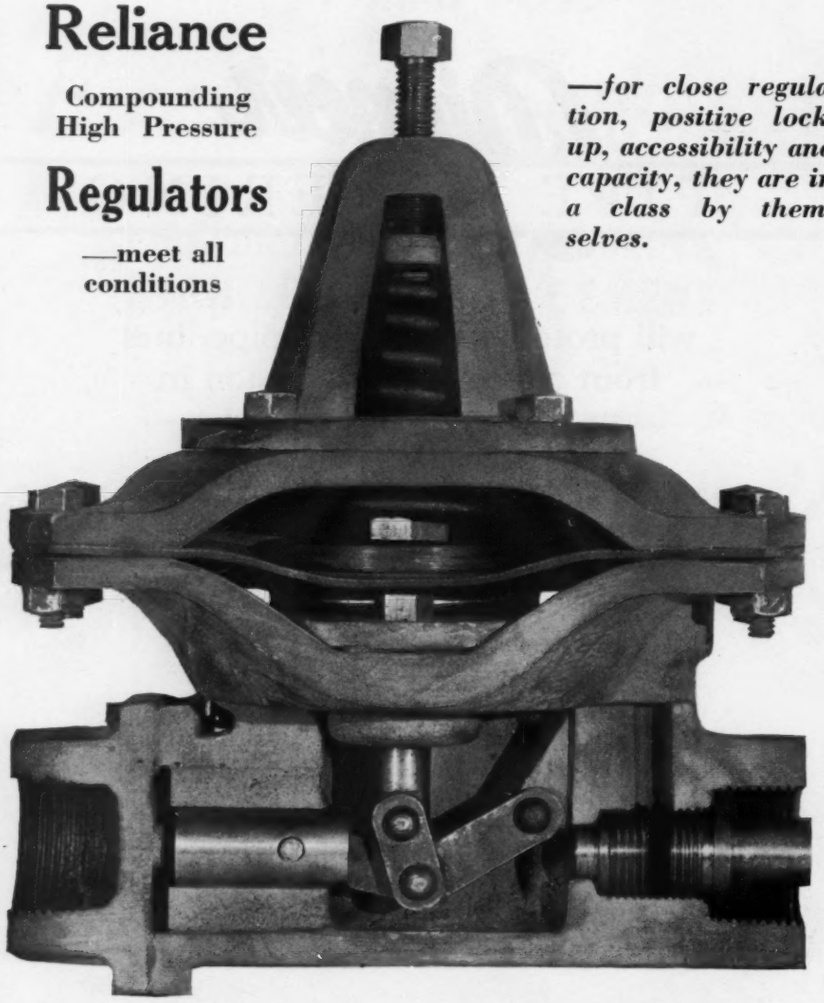
Reliance

Compounding High Pressure

Regulators

—meet all conditions

—for close regulation, positive lock-up, accessibility and capacity, they are in a class by themselves.



Reliance Manufacturing Co.

Pasadena, California

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PABCO PRODUCT

TO PROTECT

EVERY SURFACE

The Paraffine Companies, Inc.

San Francisco Oakland Los Angeles Seattle Portland

Gas Companies Must Push Sale *of* Refrigerators

(Continued from Page 38)

have to hit the ball when we get an opportunity and can't afford to be too hard-boiled; we can't afford to crab about prices or anything else. These people don't know what it is going to cost them to make gas refrigerators; havn't an idea in the world what it is going to cost them to sell them, and if they get the right cooperation from the gas industry, any one of three or four companies are technically strong enough, financially strong enough to give us a wonderful service and add to the good of our industry.

COLORADO WELL DEVELOPS LARGE GAS FLOW

A well being drilled on the southern end of the Hiawatha Dome, a structure in western Colorado just across the Wyoming border, by W. A. Myers et al, is reported to have developed a 70,000,000 cu. ft. gas flow.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC.,

Required by the Act of Congress of August 24, 1912, of *Western Gas*, published monthly at Los Angeles, California, for October 1, 1926.

State of California, County of Los Angeles, ss.

Before me, a notary public in and for the State and county aforesaid, personally appeared Jay E. Jenkins, who, having been duly sworn according to law, deposes and says that he is the business manager of *Western Gas* (magazine), and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are:

Publisher, Western Business Papers, Inc., Los Angeles, California.

Editor, James E. Jenkins, Los Angeles, California.

Managing Editor, Geo. H. Finley, Los Angeles, California.

Business Manager, Jay E. Jenkins, Los Angeles, California.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

Jay E. Jenkins, 626 S. Spring St., Los Angeles, Calif.

James E. Jenkins, 626 S. Spring St., Los Angeles, Calif.

Geo. H. Finley, 626 S. Spring St., Los Angeles, Calif.

H. Elliott Taylor, 447 Sutter St., San Francisco, Calif.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is.....

(This information is required from daily publications only.)

JAY E. JENKINS, Business Manager.

Sworn to and subscribed before me this 22nd day of September, 1926.

(Seal) JOHN SCHUMACHER,

Notary Public, in and for the County of Los Angeles, State of California.

My Commission Expires February 17, 1930.

Classified Advertising

Classified advertising five cents per word; minimum $2.00 per insertion. Situation Wanted advertisements up to 50 words will be published three consecutive issues without charge.

Help Wanted

Wanted—Experienced crew foreman for street department of Gas Company in northwestern city. Answer in own handwriting giving age, experience, reference and salary expected. Box A-4 *Western Gas.*

Situations Wanted

Note: Western Gas will publish free of charge, under this heading, advertisements of situations wanted. Maximum length, 50 words; additional space at classified rates five cents per word per insertion. Copy should be neatly typewritten on one side of paper only, and should be mailed to reach *Western Gas* not later than the 20th day of the month prior to publication date.

Wanted—Employment on the Pacific Coast by man from Mid-Continent Field. Experience installing and managing city distribution plants, and general line work. Last position paid $200.00 and expenses which I resigned due to family sickness. Box A-2 *Western Gas.*

Heating Engineer—39 with 25 years experience in warm air heating in all its branches, mfg. heaters, lay out work, figure jobs, handle men and shop, install work and sell to the public. At present employed but want better and permanent opening with chances for advancement. Will start at $250.00. Have several good gas heater patents. Box A-1 *Western Gas.*.

Chemical Engineering Graduate—28, with five year's experience, covering all branches of distribution work, wishes to change to a position offering greater opportunity for advancement. Now employed as estimator on main line construction work. Best of references. Box A-3, *Western Gas.*

Sell your second hand machinery and equipment through a small classified advertisement in *Western Gas.* It costs but five cents per word or $2.00 per issue.

NEW LITERATURE DESCRIBES R. G. T. GAS FILTER

Western Gas Equipment Corporation, 1298 Bryant Street, San Francisco, have some new descriptive literature on the R. G. T. Gas Filter which the company distributes.

NEW MANAGER FOR TUCSON CO. COMES FROM FAR NORTH

Max Pooler from St. Johns, New Brunswick, Canada, has just been appointed manager of the Tucson Gas & Electric Company, Arizona, replacing Sam Headman, former manager.

Corrosion, the destructive and costly enemy of your pipe lines, is effectively balked by the thick protective coating made by one application of Eclipse Save-A-Line to the pipe surface.

This extra thick film ,reinforced with asbestos fibre, elastic and enduring, protects for many years against the corrosive action of soils caused by moisture, lime, alkali or electrolysis. The life of thousands of miles of pipe line has been extended by the protecting film of Save-A-Line.

It can be applied without heating and by inexperienced labor. Only one application necessary.

Let us know your requirements. We will be glad to send you sample and quote you prices. If you have any particular difficulties peculiar to your soil or climate, our Service Department is at your disposal.

A Few of the Larger Users of Save-A-Line

The Shell Company
Lone Star Gas Company
Humble Pipe Line Company
The Gulf Pipe Line Company
Associated Pipe Line Company
California Petroleum Co.

The Eclipse Paint & Mfg. Co.

Cleveland, Ohio, U. S. A.

Dallas **Detroit** **Philadelphia** **San Francisco**
Denver **Newark** **Pittsburgh** **Charlotte, N. C.**

WESTERN GAS
626 South Spring Street,
Los Angeles, California

Starting with the next monthly issue, you may send WESTERN GAS to the undersigned. Upon receipt of invoice, remittance will be sent to cover (1 year $2.00) or (3 years $5.00).

Name ..... *Title* .....

Company .....

Address .....

City and State .....

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[ ] NATURAL GASOLINE CO. [ ] MISCELLANEOUS

Subscription: 1 Year, $2.00; 3 Years, $5.00, in Advance

A WESTERN GUIDE to INDUSTRIAL PURCHASING

Readers interested in any articles not listed in these pages are cordially invited to advise *Western Gas* of their wants and every effort will be made to furnish a list of the proper manufacturers. Addresses of companies listed on these pages may be found by consulting their advertisements in this issue.

Absorption and Compression Plant Equipment
Baker Iron Works.
C. F. Braun & Co.
Chaplin-Fulton Mfg. Co.
J. A. Campbell.
Jensen Instrument Co.
The E. A. Key Company
Western Pipe & Steel Co.

Absorption Towers
Baker Iron Works.
C. F. Braun & Co.
J. A. Campbell.
S. Herbert Lanyon
Steere Engineering Co.
Western Pipe & Steel Co.

Abrasives
Abrasive Engineering Corp'n.

Acetylene, Dissolved
Commercial Acetylene Co.

Acid Resisting Iron
Pacific Foundry Company.

Adjustable Plugs
Lattimer-Stevens Co.
Western Pipe & Steel Co.

Agitators
Baker Iron Works.
Western Pipe & Steel Co.

Aluminum Bronze Powder for Paint
The Paraffine Co.s, Inc.

Ammonium Sulphate Production Apparatus (without Sulph. Acid.)

Analyzers
C. F. Braun & Co.
Smith-Emery Co.

Annealers (Bar, Blank, Strip)
Pacific Meter Works.

Anti-Fluctuators
Pacific Meter Works.

Apparatus, Experimental Gas
The Alpha-Lux Co., Inc.
Metric Metal Works.
Pacific Meter Works.

Appraisals and Valuations
Smith-Emery Co.

Aqua Ammonia Apparatus
Steere Engineering Co.

Asphalt Compounds
Pioneer Paper Company.

Bags, Gas Main
Connelly Iron Sponge & Governor Co.
Mueller Co.
Safety Gas Main Stopper Co.

Barometers
Jensen Instrument Co.
Westcott & Greis, Inc.

Belting
Smith, Booth, Usher Co.

Benches

Bench Iron Work
General Gas Light Co.

Benzol, Recovery Apparatus
Steere Engineering Co.

Bins, Storage (ash, coal, coke)
Steere Engineering Co.

Blast Gates
Montague Pipe & Steel Co.
Steere Engineering Co.

Blocks and Tiles, Fire Clay
The Alpha-Lux Co., Inc.
American Refractories Co.
Los Angeles Pressed Brick Co.
Steere Engineering Co.
Stockton Fire Brick Co.
S. Herbert Lanyon.

Blowers and Boosters
General Gas Light Co.
Ingersoll-Rand Co.

Blowpipes
Montague Pipe & Steel Co.

Boiler—Brickwork
J. N. J. Firebrick Co.

Boiler Settings, Pipe and Boiler Insulation

Boilers
Baker Iron Works.
The E. A. Key Company
Montague Pipe & Steel Co.
Smith, Booth, Usher Co.
Western Pipe & Steel Co.

Boilers, Gas-Fired
Baker Iron Works.
General Gas Light Co.
Montague Pipe & Steel Co.
Smith, Booth, Usher Co.

Boiler Settings, Pipe and Boiler Insulation
S. Herbert Lanyon.
Pioneer Paper Company.
J. J. Thorpe & Son, Inc.

Boilers, Waste Heat
Baker Iron Works.

Boilers, Water Tube
Baker Iron Works.
The E. A. Key Company
Montague Pipe & Steel Co.
Smith, Booth, Usher Co.
Western Pipe & Steel Co.

Boxes
Baker Iron Works.
Gas Furnace Association.
Steere Engineering Co.

Brass (rods, sheets, tubes, wire)
Mueller Co.

Brazing Tables

Breakers
Ingersoll-Rand Co.

Breeching (Boiler and Stack)
Western Pipe & Steel Co.

Brick, Firebrick
Abrasive Engineering Corp'n.
The Alpha-Lux Co., Inc.
American Refractories Co.
Los Angeles Pressed Brick Co.
S. Herbert Lanyon.
J. J. Thorpe & Son, Inc.
Steere Engineering Co.
Stockton Fire Brick Co.

Brick, Firebrick—Installation
J. N. J. Firebrick Co.

Broilers, Hotel
General Gas Light Co.

Brushes, Wire Pneumatic
Abrasive Engineering Corp'n.
Ingersoll-Rand Co.

Buildings, Steel
Baker Iron Works.
Western Pipe & Steel Co.

Bunkers, Steel and Concrete
Western Pipe & Steel Co.

Burners
Gas Furnace Association.
General Gas Light Co.
S. Herbert Lanyon.
Lee B. Mettler.
Montague Pipe & Steel Co.
Payne Furnace & Supply Co.
Rotary Manufacturing Co.
J. J. Thorpe & Son, Inc.
Western Pipe & Steel Co.

Burners—Gas
Lee B. Mettler

Burners, High Pressure
General Gas Light Co.
S. Herbert Lanyon.
Lee B. Mettler.
Rotary Manufacturing Co.

Burners, Low Pressure
Gas Furnace Association.
General Gas Light Co.
S. Herbert Lanyon.
Lee B. Mettler.
Payne Furnace & Supply Co.
Rotary Manufacturing Co.

Burners—Oil—Gas
Rotary Manufacturing Co.

By-product Recovery Apparatus
Oliver Continuous Filter Co.
Steere Engineering Co.

Calorimeter Accessories
Metric Metal Works.
Pacific Meter Works.

Calorimeters
The Alpha-Lux Co., Inc.
Metric Metal Works.
Pacific Meter Works.

Cases, Meter
Metric Metal Works.
Pacific Meter Works.
Pittsburgh Meter Co.

Casinghead, Gas Meters
Jensen Instrument Co.
Metric Metal Works.
Pacific Meter Works.
Pittsburgh Meter Co.

Casing and Tubing (steel)
Montague Pipe & Steel Co.
Smith, Booth, Usher Co.
Steere Engineering Co.

Casing, Wrought Iron
Smith, Booth, Usher Co.

Castings
Pacific Foundry Company.
Philadelphia Steel & Iron Co.
Steere Engineering Co.
United States Cast Iron Pipe and Foundry Co.

Casing—Iron
South Chester Tube Company

Casing—Steel
South Chester Tube Company

Cast Iron Pipe
Smith, Booth, Usher Co.
Steere Engineering Co.
United States Cast Iron Pipe and Foundry Co.

Cement
Abrasive Engineering Corp'n.
Stockton Fire Brick Co.

Cement, High Temperature
Stockton Fire Brick Co.

Cement—Plastic
Pioneer Paper Company.

Centrifugal Pipe
United States Cast Iron Pipe and Foundry Co.

Charging Machines (retort, etc.)
Steere Engineering Co.

Checker Brick
Abrasive Engineering Corp'n.
American Refractories Co.
Los Angeles Pressed Brick Co.
Steere Engineering Co.
Stockton Fire Brick Co.

Chemical and Gas Testing Apparatus
The Alpha-Lux Co., Inc.
Pacific Meter Works.
Westcott & Greis, Inc.

Chemists, Analytical
Smith-Emery Co.

Chimneys, Radial Brick
American Refractories Co.
Los Angeles Pressed Brick Co.
Stockton Fire Brick Co.
J. J. Thorpe & Son, Inc.

Chimneys, Radial Brick Installation
J. N. J. Firebrick Co.

Chutes (coal, coke, ash)
Steere Engineering Co.
United States Cast Iron Pipe and Foundry Co.

Clamps and Sleeves, Pipe
Mueller Co.

Clamps, Service
Mueller Co.

Cleaners, Service
General Gas Light Co.
Pacific Meter Works.

Coal Gas Plants
Steere Engineering Co.

Coal Tar Products and Chemicals
The Paraffine Co.s, Inc.

Cocks
General Gas Light Co.
Lattimer-Stevens Co.
Merco Nordstrom Valve Co.
Mueller Co.
Geo. D. Roper Corporation.

Coils and Bends
Philadelphia Steel & Iron Co.

Collectors, Dust
Western Pipe & Steel Co.
Steere Engineering Co.

Compressors
The C. & G. Cooper Co.
Ingersoll-Rand Co.
Smith, Booth, Usher Co.

Compressors, Air
The C. & G. Cooper Co.
Ingersoll-Rand Co.
Oliver Continuous Filter Co.
Robertson & Company.
Smith, Booth, Usher Co.

Compressors, Gas
The C. & G. Cooper Co.
Ingersoll-Rand Co.
Smith, Booth, Usher Co.

Compressors, High Pressure
The C. & G. Cooper Co.
Ingersoll-Rand Co.

Compressors, Portable
Ingersoll-Rand Co.
Robertson & Company.
Smith, Booth, Usher Co.

Condensers
Baker Iron Works.
C. F. Braun & Co.
Ingersoll-Rand Co.
S. Herbert Lanyon.
Steere Engineering Co.

Condenser Boxes
Baker Iron Works.

Condenser Tubes
Steere Engineering Co.

Cooling Systems, Towers
C. F. Braun & Co.
Steere Engineering Co.

Connections and Seals, Meter
Pacific Meter Works.

Controllers
Jensen Instrument Co.

Controlling Devices, Electric
Gas Furnace Association.

Controls, Air and Steam
Jensen Instrument Co.
S. Herbert Lanyon.
C. F. Braun & Co.
S. Herbert Lanyon.
Steere Engineering Co.

Cooling Systems
S. Herbert Lanyon.
Steere Engineering Co.

Cooling Towers
C. F. Braun & Co.
Steere Engineering Co.

Counters, Revolution
Jensen Instrument Co.

Couplings
Pittsburgh Meter Co.

Coverings (Tank, Boiler, Cold and Steam Pipe)
The Paraffine Co.s, Inc.
Pioneer Paper Company.

Cubic Foot Bottle
Metric Metal Works.
Pacific Meter Works.

Cutters, Pavement
Ingersoll-Rand Co.
Robertson & Company.

Cutters, Pavement
Ingersoll-Rand Co.

Cylinders, Compressor
The C. & G. Cooper Co.
Steere Engineering Co.

Dephlegmaters
C. F. Braun & Co.
Steere Engineering Co.
Western Pipe & Steel Co.

Diaphragms, Meter
Chaplin-Fulton Mfg. Co.
General Gas Light Co.
Metric Metal Works.
Pacific Meter Works.
Pittsburgh Meter Co.

Diggers, Clay
Ingersoll-Rand Co.
Robertson & Company.

Discharging Machines (retort, etc.)
Steere Engineering Co.

Displacement System, Tar
Steere Engineering Co.

Ditcher
Robertson & Company.
Smith, Booth, Usher Co.

Door, Clean-out
Baker Iron Works.
Steere Engineering Co.

Drills
Ingersoll-Rand Co.
Mueller Co.

Drill Pipe—Iron
South Chester Tube Company

Drill Pipe—Steel
South Chester Tube Company

Dryers
Payne Furnace & Supply Co.

Elevators
Baker Iron Works.

Engineers and Engineering Service
Smith-Emery Co.
Steere Engineering Co.
Western Pipe & Steel Co.

Engines
The C. & G. Cooper Co.
Ingersoll-Rand Co.
Western Machinery Co.

Engines, Diesel
The C. & G. Cooper Co.
Smith, Booth, Usher Co.
Western Machinery Co.

Engines, Gas
The C. & G. Cooper Co.
Ingersoll-Rand Co.
Smith, Booth, Usher Co.
Western Machinery Co.

Engines, Oil
The C. & G. Cooper Co.
Ingersoll-Rand Co.
Western Machinery Co.

Engines, Steam
Ingersoll-Rand Co.

IS RUST "KNOCKING" YOUR PRODUCT?

When rust attacks water-heating equipment it not only impairs the efficiency of the installations—it also "knocks" the reputation of the manufacturers.

Water heaters equipped with vital parts of COPPER, BRASS and BRONZE maintain their efficiency and also maintain high reputation for their makers.

COPPER, BRASS and BRONZE do not rust.

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San Francisco, California

Evaporating Apparatus
C. F. Braun & Co.
United States Cast Iron Pipe and Foundry Co.
S. Herbert Lanyon.

Excavators, Ditch and Trench
Robertson & Company.
Smith, Booth, Usher Co.

Exchangers, Heat
Baker Iron Works.
C. F. Braun & Co.
S. Herbert Lanyon.
Steere Engineering Co.
Western Pipe & Steel Co.

Exhausters
Ingersoll-Rand Co.
S. Herbert Lanyon.
United States Cast Iron Pipe and Foundry Co.

Experimental Apparatus
S. Herbert Lanyon.
Metric Metal Works.
Pacific Meter Works.

Extractors
Steere Engineering Co.

Extinguishers, Fire
American La France Fire Engine Co.

Fans
Gas Furnace Association.
General Gas Light Co.
Smith, Booth, Usher Co.

Faucets, Drain
Mueller Co.

Felt—Deadening
Pioneer Paper Company.

Filters
S. Herbert Lanyon.
Oliver Continuous Filter Co.
Smith, Booth, Usher Co.
United States Cast Iron Pipe and Foundry Co.

Fire Clay and Products
The Alpha-Lux Co., Inc.
American Refractories Co.
S. Herbert Lanyon.
Los Angeles Pressed Brick Co.
Stockton Fire Brick Co.

Fire Brick Contractors
J. J. Thorpe & Son, Inc.
Stockton Fire Brick Co.

First Aid Equipment
American La France Fire Engine Co.

Fittings
Pacific Foundry Company.
Philadelphia Steel & Iron Co.
Smith, Booth, Usher Co.
Steere Engineering Co.
United States Cast Iron Pipe and Foundry Co.

Fixtures, Lighting (Domes, Portables, etc.)
Welsbach Company.

Flashlights and Batteries
The Paraffine Co.s, Inc.

Feed Water Heaters
C. F. Braun & Co.
S. Herbert Lanyon.

Fire Brick
Abrasive Engineering Corp'n.
The Alpha-Lux Co., Inc.
American Refractories Co.
S. Herbert Lanyon.
Los Angeles Pressed Brick Co.
Stockton Fire Brick Co.
Steere Engineering Co.

Flanges
Montague Pipe & Steel Co.
Pacific Foundry Company.
Pittsburgh Meter Co.
Smith, Booth, Usher Co.
Steere Engineering Co.
Westcott & Greis, Inc.

Floodlights
S. Herbert Lanyon.

Flooring—Industrial
Pioneer Paper Company.

Floors
Steere Engineering Co.

Forges, Gas-Fired
General Gas Light Co.

Forged Steel Pipe Flanges
Philadelphia Steel & Iron Co.

Forgings
Baker Iron Works.
Philadelphia Steel & Iron Co.
Gas Furnace Association.
General Gas Light Co.
S. Herbert Lanyon.
Payne Furnace & Supply Co.
Potter Radiator Corporation.
Pacific Gas Heating Co.
Geo. D. Roper Corporation.
J. J. Thorpe & Son, Inc.

Furnaces, Floor
Electrogas Furnace Co.
Gas Furnace Association.
Payne Furnace & Supply Co.
Pacific Gas Heating Co.
Potter Radiator Corporation.

Furnaces, Lead Melting
Gas Furnace Association.
Mueller Co.
Payne Furnace & Supply Co.
Potter Radiator Corporation.

Gas Analysis Apparatus
Jensen Instrument Co.
Metric Metal Works.
Pacific Meter Works.

Gas Meter Stop Cocks and Valves
Lattimer-Stevens Co.

Gas Main Tapping & Drilling Machines
Mueller Co.

Gaskets
Pittsburgh Meter Co.
Safety Gas Main Stopper Co.
Smith, Booth, Usher Co.
Steere Engineering Co.
The E. A. Key Company

Gasometer
Pacific Meter Works.
Steere Engineering Co.

Gas Pipe Line Construction
The E. A. Key Company
Robertson & Company.
Steere Engineering Co.
Western Pipe & Steel Co.

Gauges
The Alpha-Lux Co., Inc.
General Gas Light Co.
Jensen Instrument Co.
Metric Metal Works.
Pacific Meter Works.
Pittsburgh Meter Co.
Steere Engineering Co.
Westcott & Greis, Inc.

Gauges, Steam
Jensen Instrument Co.
Smith, Booth, Usher Co.
Steere Engineering Co.
Westcott & Greis, Inc.

Gauges, U Type
General Gas Light Co.
Jensen Instrument Co.
Metric Metal Works.
Lee B. Mettler.
Pacific Meter Works.
Safety Gas Main Stopper Co.
Steere Engineering Co.
Westcott & Greis, Inc.

Generators, Acetylene
Commercial Acetylene Co.

Generators, Water Gas
Baker Iron Works.
Steere Engineering Co.

Glassware
Westcott & Gries, Inc.

Governors
Chaplin-Fulton Mfg. Co.
Connelly Iron Sponge & Governor Co.
Pacific Meter Works.
Reynolds Gas Regulator Co.
Sprague Meter Co.
Steere Engineering Co.
Westcott & Greis, Inc.

Hammers
Ingersoll-Rand Co.

Hanger, Meter
Mueller Co.

Hangers, Iron and Steel
Baker Iron Works.
Philadelphia Steel & Iron Co.

Heaters
Baker Iron Works.
C. F. Braun & Co.
Gas Furnace Association.
General Gas Light Co.
S. Herbert Lanyon.
Pacific Gas Heating Co.
Payne Furnace & Supply Co.
Potter Radiator Corporation.
Welsbach Company.
John Wood Mfg. Co.

Heaters, Floor
Electrogas Furnace Co.
Gas Furnace Association.
General Gas Light Co.
Pacific Gas Heating Co.
Payne Furnace & Supply Co.
Potter Radiator Corporation.

Heaters, Wall
Gas Furnace Association.
General Gas Light Co.
Pacific Gas Heating Co.
Payne Furnace & Supply Co.
Potter Radiator Corporation.

Heat Exchangers
Baker Iron Works.
C. F. Braun & Co.
S. Herbert Lanyon.
Steere Engineering Co.
Western Pipe & Steel Co.

Heat Interchangers
C. F. Braun & Co.
S. Herbert Lanyon.
Steere Engineering Co.
Western Pipe & Steel Co.

Hoists
Ingersoll-Rand Co.
Pacific Foundry Company.
Smith, Booth, Usher Co.
Western Machinery Co.

Holders
Baker Iron Works.

Holders, High Pressure
Baker Iron Works.

Hoppers
Montague Pipe & Steel Co.

Hose, Air
Ingersoll-Rand Co.

Hot Plates
General Gas Light Co.
Geo. D. Roper Corporation.

Hygrometers
Jensen Instrument Co.
Westcott & Greis, Inc.

Incinerators
Baker Iron Works.
General Gas Light Co.
S. Herbert Lanyon.
J. J. Thorpe & Son, Inc.
Western Pipe & Steel Co.

Incinerator Brickwork
J. N. J. Firebrick Co.

Indicators
S. Herbert Lanyon.
Westcott & Greis, Inc.

Instruments (Measuring, Testing and Recording)
The Alpha-Lux Co., Inc.
Jensen Instrument Co.
Metric Metal Works.
Pacific Meter Works.
Steere Engineering Co.
Westcott & Greis, Inc.

Insulating Materials
Beacon Water Heater Co.
The Paraffine Co.s, Inc.
Pioneer Paper Company.
Stockton Fire Brick Co.

Irons, Gas
General Gas Light Co.

Kilns
J. J. Thorpe & Son, Inc.
Western Pipe & Steel Co.

Kilns—Brickwork
J. N. J. Firebrick Co.

Laboratory (for testing fire brick, refractories, etc.)

Laboratory Supplies
Mueller Co.
S. Herbert Lanyon.
Westcott & Greis, Inc.

Ladles, Hot Metal
Mueller Co.
Philadelphia Steel & Iron Co.

Lamps
General Gas Light Co.
Welsbach Company.

Lighters
Tappan Stove Co.

Lighting Incidentals
Welsbach Company.

Line Pipe—Iron
South Chester Tube Company

Line Pipe—Steel
South Chester Tube Company

Linings—Brickwork
J. N. J. Firebrick Co.

Linings—Car
Pioneer Paper Company.

Lubricators
Smith, Booth, Usher Co.

Lubricating Systems, Force Feed

Lux Material
The Alpha-Lux Co., Inc.

Machinery
Smith, Booth, Usher Co.
Steere Engineering Co.

Machines
Steere Engineering Co.

Main, Bags
Mueller Co.
Safety Gas Main Stopper Co.

Mains, Street
United States Cast Iron Pipe and Foundry Co.

Main, Stopper
Mueller Co.
Safety Gas Main Stopper Co.

Mantles, Gas Lighting
General Gas Light Co.
Welsbach Company.

Manometers
Jensen Instrument Co.
Lee B. Mettler.
Westcott & Greis, Inc.

Meter Seals
Lattimer-Stevens Co.

Meter Shelves
Lattimer-Stevens Co.

Meter Swivels and Caps
Lattimer-Stevens Co.

Meters
Jensen Instrument Co.
Metric Metal Works.
Pacific Meter Works.
Pittsburgh Meter Co.
Sprague Meter Co.
Westcott & Greis, Inc.

Meters, Air
Jensen Instrument Co.
Metric Metal Works.
National Meter Co.
Pacific Meter Works.
Pittsburgh Meter Co.
Westcott & Greis, Inc.

Meters, Boiler
Jensen Instrument Co.
Pittsburgh Meter Co.

Meters, Burner Test
Metric Metal Works.
National Meter Co.
Pacific Meter Works.
Pittsburgh Meter Co.
Sprague Meter Co.

Meters, Cast Iron Gas
Metric Metal Works.
National Meter Co.
Pacific Meter Works.
Pittsburgh Meter Co.
Sprague Meter Co.

Meter Connections
Lattimer-Stevens Co.
Metric Metal Works.
National Meter Co.
Pacific Meter Works.
Pittsburgh Meter Co.
Sprague Meter Co.

Meters, Complaint
Metric Metal Works.
Pacific Meter Works.
Pittsburgh Meter Co.

Meters, Consumers
Metric Metal Works.
Pacific Meter Works.
Pittsburgh Meter Co.
Sprague Meter Co.

Meters, Flow
Jensen Instrument Co.
Metric Metal Works.
Pittsburgh Meter Co.
Westcott & Greis, Inc.

Meters, Fluid
Jensen Instrument Co.
Metric Metal Works.
Pittsburgh Meter Co.
Westcott & Greis, Inc.

Meters, Gas
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National Meter Co.
Pacific Meter Works.
Pittsburgh Meter Co.
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Meters, Oxygen and Hydrogen
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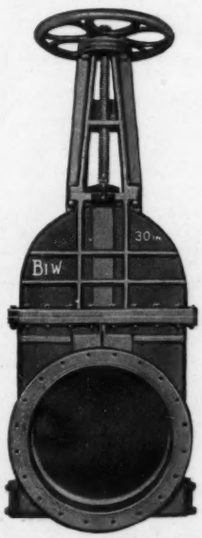

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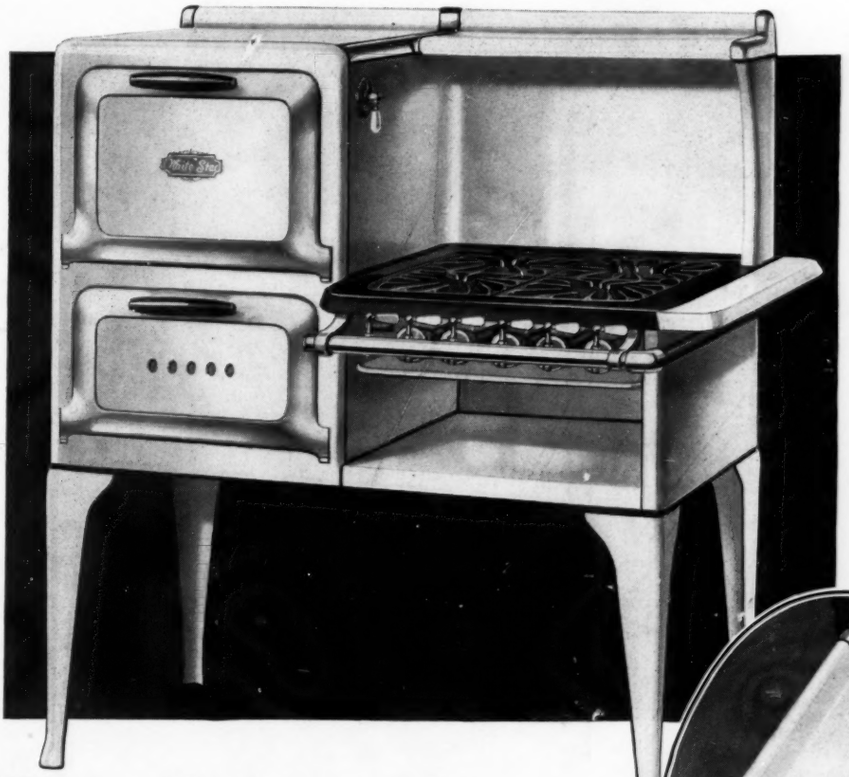
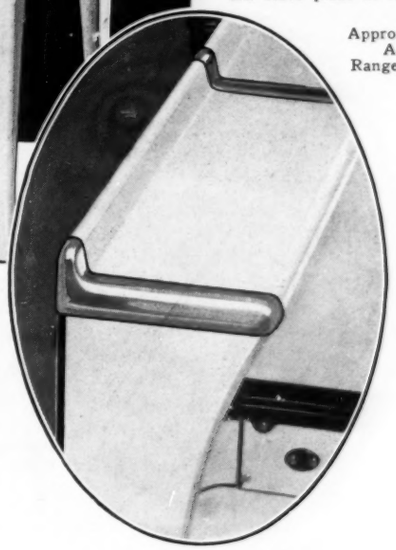


Christened "The World's Cleanest Gas Range" at the California Maid Exposition, where it took first prize.

The White Star Gas Range is manufactured in the most modern stove plant in the world.

Approved by the American Gas Range Association



Wins Love at First Sight!

14 Visible Betterments Instantly "Sell" This Range

Here is a range with 14 definite sales-compelling betterments that literally "sell it on the spot." None of the White Star's 14 patented improvements can be had elsewhere.

This is the "world's cleanest range," and looks it. Hospital cleanliness is suggested at once by the gleaming white enamel finish with black trim and gray door frames. Corners, edges and crevices are *rounded* and white enamaled. Not a bolt head can be seen. In a few minutes a cloth cleans this range as easily as a saucer.

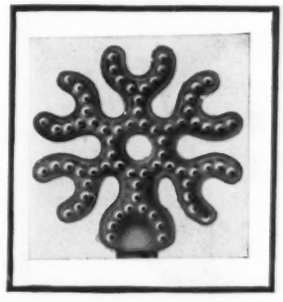
Heavy sheet steel, cast iron and channel iron construction all with interlocking joints, make for extreme rigidity with just enough "give," under strain, to protect the enamel. White Star engineers have practically solved the enamel problem, and decrease in breakage cuts out expensive replacements for you.

PRICES

Surprisingly low prices top off these important selling features and clinch sales without great sales effort. The particulars are worth while. Let us give them to you *AT ONCE!*

THE DETROIT VAPOR STOVE COMPANY
Detroit, Michigan

White Star



Here Are Two of the White Star's 14 Patented Improvements:

The upper picture shows the One-Piece Roll Top Heating Shelf. Not a crack or crevice is found in this extra strong fixture.

The White Star Burner is shown in the lower picture. Its design is based on a pattern of interlocking circles; each embossed port of the burner area delivers the same amount of heat, assuring gas efficiency and better cooking.

636

PROTECTION

ON seventeenth century Sundays our Pilgrim fathers wended their way to church, each with a loaded musket on his arm. Constant vigilance was their ever-present need, the iron barrel of a musket their best defense. The Pilgrim and his weapon were inseparable.

Your gas lines are also exposed to hidden attack—strains, sags and washer shrinkage are ambushed enemies of your property. For their protection, Lattimer-Stevens meter connections and shelves are the standard equipment of gas companies in practically every state in the Union. The rigid iron bar protects from strains and sags, the shelf from washer shrinkage.

Lattimer-Stevens connections are tested by heavy air pressure under water. Write us for sample and catalog

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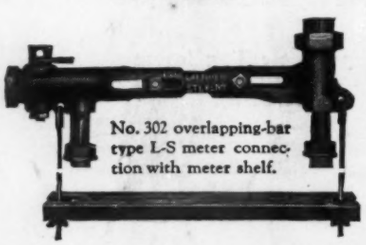

No. 302 overlapping-bar type L-S meter connection with meter shelf.

Chicago Representative
The Utilities Service Co.
122 South Michigan Ave.

Lattimer Stevens

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STOP COCKS AND SEALS